NOTICE

All drawings located at the end of the document.

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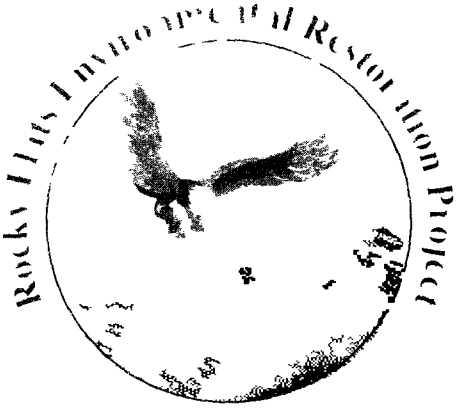
21000 SPCC/BMP

EG&G

SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES SPCC/BMP PLAN



SEPTEMBER 1992

Spill Prevention Control Countermeasures and Best Management Practices (SPCC/BMP) Plan

EG&G ROCKY FLATS

Manual No. 21000-SPCC/BMP

September, 1992

Spill Prevention Control Countermeasures and Best Management Practices (SPCC/BMP) Plan

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Prepared by Doty and Associates

EG&G Rocky Flats
Environmental Protection Management Department
Surface Water Division
P O Box 464
Golden, CO

On behalf of the U S Department of Energy

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Spill Prevention Control Countermeasures and Best Management Practices (SPCC/BMP) Plan

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TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert E. Fiehweg 9/17/92

SWD Regulatory Programs Manager Date

1 0 FOREWORD

1 1 PURPOSE

This Spill Prevention Control Countermeasures and Best Management Practices (SPCC/BMP) Plan has been prepared in support of the Rocky Flats National Pollutant Discharge Elimination System (NPDES) Permit The purpose of this SPCC/BMP Plan is to document existing plans and programs which prevent or minimize the potential for significant releases of toxic or hazardous substances from the Rocky Flats Plant (RFP) to waters of the United States The SPCC/BMP Plan will be kept onsite and made available to the permitting authority on request The RFP SPCC/BMP Plan is reviewed as appropriate and revised every three years

The original SPCC/BMP Plan was prepared in November 1981, and officially updated in March 1985 The SPCC/BMP Plan has been in an ongoing review and modification process since January 1987 Revisions to the plan were needed so that the plan would reflect significant RFP operational and organizational changes that were implemented to better respond to the requirements of the Resource Conservation and Recovery Act (RCRA) Regulations, the occurrence of the Chromic Acid Spill, and the change in the operating contractor of RFP, as well as the changed mission of RFP In addition, a current plan is needed for completion of the NPDES permit

The approach taken in preparation of this SPCC/BMP Plan was to gather information on existing programs and plans that had pertinence to SPCC/BMP issues These programs and plans were evaluated for compliance with typical industrial standards for SPCC/BMP requirements Where deficiencies were identified in existing programs, requirements were identified in this SPCC/BMP Plan such that RFP facilities and operations will meet or exceed typical industrial standards for compliance with SPCC/BMP requirements In case of a spill these other documents rather than this SPCC/BMP Plan should be used to determine appropriate response actions This plan, and activities related to this plan, are consistent with the RFP value of conducting all operations with the utmost regard for ensuring safety and protection of the environment

The fundamental objective for all operations at RFP is that they be conducted in a safe and professional manner which complies with applicable laws, orders, and regulations The safety and general welfare of RFP employees, the general public, and the surrounding environment shall be the primary concern during daily conduct of operations activities With regard to safety and environmental activities, performance goals and objectives will be set that encourage continual improvement in performance and avoid a sense of self-satisfaction or complacency (EG&G, 1991)

1 2 REFERENCES

EG&G, 1991, "Conduct of Operations Manual," Revision 1 , COOP-001, Rocky Flats Plant Manual, p 4, July 26

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CONTROL OF SWD Approved By Robert E. Fischer 9/17/92

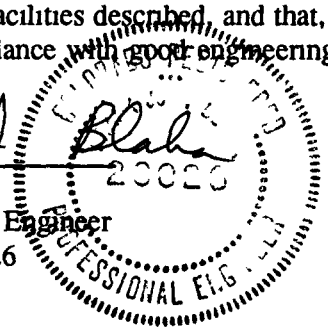
SWD Regulatory Programs Manager Date

2 0 ENGINEER'S CERTIFICATION

I certify that I have reviewed this plan and am familiar with the requirements of 40 CFR 110, 112, and 125, that I am familiar with the facilities described, and that, based on the information provided, this SPCC/BMP Plan has been prepared in accordance with good engineering practices

Frank J Blaha

F J Blaha
Registered Professional Engineer
State of Colorado, 26026



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CONTROL OF SWD Approved By Robert E. Fikweg 9/25/92
SWD Regulatory Programs Manager Date

3 0 ACRONYMS AND DEFINITIONS

3 1 ACRONYMS

AIP	Agreement In Principle
ALARA	As Low As Reasonably Achievable
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
BMP	Best Management Practice
CA	Controlled Area
CAA	Clean Air Act
CCR	Colorado Code of Regulations
CCS	Chemical Control System
CDH	Colorado Department of Health
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
CMT	Crisis Management Team
CSI	Colorado Safety Institute
CTCS	Chemical Tracking Control System
CWA	Clean Water Act
DIS	Drain Identification Study
DOE	United States Department Of Energy
DOT	United States Department of Transportation
ECS	Emergency Control Station
EOC	Emergency Operations Center
EM	Environmental Management
EM/PM	Equipment Management/Preventive Maintenance
EPA	United States Environmental Protection Agency
ERDA	Energy Research and Development Administration
E&S	Environmental & Safety
FFCA	Federal Facility Compliance Agreement
FMT	Field Management Team
GAC	Granular Activated Carbon
GET	General Employee Training
GPMPP	Groundwater Protection and Monitoring Program Plan
Haz-Mat	Hazardous Materials
H&S	Health & Safety
HRR	Historical Release Report
HSP	Health & Safety Practice
IAG	Interagency Agreement
IC	Incident Commander
IHSS	Individual Hazardous Substance Site

ITPH	Interceptor Trench Pump House
IWCP	Integrated Work Control Procedure
JSA	Job Safety Analysis
LCO	Limiting Condition of Operation
MR	Material Requisition
MSDS	Material Safety Data Sheet
NDT	Non-Destructive Testing
NFPA	National Fire Protection Association
NPDES	National Pollutant Discharge Elimination System
OM	Operations Manager
ONC	Occurrence Notification Center
OPWL	Original Process Waste Lines
OSA	Occupational Safety Analysis
PA	Protected Area
PBT	Performance Based Training
PCB	Polychlorinated Biphenyl
PM	Preventive Maintenance
PR	Purchase Requisition
RCRA	Resource Conservation and Recovery Act
RFEP	Rocky Flats Emergency Plan
RFO/DOE	Rocky Flats Office of DOE
RFP	Rocky Flats Plant
RQ	Reportable Quantity
SARA	Superfund Amendments and Reauthorization Act
SPCC	Spill Prevention Control Countermeasures
SS	Shift Superintendent
STP	Sewage Treatment Plant
SWD	Surface Water Division
SWMP	Surface Water Management Plan
SWMU	Solid Waste Management Unit
UST	Underground Storage Tank
WMP	Waste Minimization Program
WWTP	Wastewater Treatment Plant
WQCC	Water Quality Control Commission
ZOWDS	Zero-Offsite Water-Discharge Study

3 2 DEFINITIONS

AGREEMENT IN PRINCIPLE (AIP) - A regulatory agreement between the State of Colorado and the Department of Energy Signed on June 28, 1989, the intent was to assure the citizens of Colorado that discharges from the Rocky Flats Plant do not adversely affect public health and safety See text for further discussion

AS LOW AS REASONABLY ACHIEVABLE (ALARA) - A basic concept of radiation protection that specifies that the radioactive discharges from nuclear plants and radiation exposure to personnel be kept as far below regulatory limits as practical with consideration of economic, technical, and social factors

ANCILLARY EQUIPMENT - Equipment essential to a facility, process, or another more significant piece of equipment to which it is physically connected

AUXILIARY EQUIPMENT - Equipment used to assist in ordinary use of a facility, process, or other equipment that is not physically attached

BEST MANAGEMENT PRACTICES (BMPs) - Those measures or combination of measures which prevent or minimize the potential for release of toxic and hazardous pollutants in significant amounts to navigable waters The potential sources of toxic and hazardous pollutants are those associated with or ancillary to the industrial manufacturing or treatment process BMPs are often programmatic or administrative in nature and identify specific spill prevention measures or structures

BUFFER ZONE - The land surrounding the 400-acre Controlled Area in which no production activities occur The buffer zone is fenced and is posted with "No Trespassing" signs The total area of the buffer zone is approximately 6,150 acres

CONTINUOUS RELEASE - A release that is constantly occurring such as evaporation from the solar evaporation ponds

CONTROLLED AREA - The developed portion of the RFP on which the major production, research, development, administrative and support facilities are located This portion of the RFP consists of approximately 400 acres located near the center of the 6,550 acres that comprise the plant.

ENVIRONMENTAL INCIDENT - Any release of chemicals, solid materials, particulates, or gases from the containment systems caused by RFP operations that may be harmful to the surrounding environment The release may be within, leading to or from, or outside the boundaries of the RFP

FOOTING DRAIN - A drain near a foundation footing of a building that collects groundwater, incidental water, leakage from inside the building including liquids from spills, and any other liquid that seeps to the footing These drains are sometimes equipped with sump pumps to remove the water

HAZARDOUS MATERIAL - A substance or material, including a hazardous substance, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported, and which is designated as such in 49 CFR 172 101, or the appendix to 172 101, or that meets the definition of a hazardous waste as identified in the 40 CFR 261

HIGH-RISK AREA - An area in which current conditions or operational history indicates that a reasonable potential for a release exists An area in which adequate BMPs have been implemented is not a high-risk area

LIMITING CONDITION OF OPERATION - The lowest functional capability/performance levels of equipment required for safe operation of a nuclear facility Remedial actions are defined for each Limiting Condition for Operation

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) - A permitting system promulgated under the Clean Water Act that sets limits on concentrations of pollutants that may be discharged by a facility regulated under this law NPDES permits also stipulate the monitoring, reporting, and release requirements for the facility The NPDES permit for RFP is administered by the U S Environmental Protection Agency

OCCURRENCE - A condition or event that represents

- a problem or concern that could have a negative impact on safety, environment, health, quality, security, or operations
- a failure, malfunction, deficiency, deviation, defective item, or non-conformance associated with safety related material, equipment, processes, procedures, or programs
- a deviation from standard requirements, procedures, or operations including all safety, quality, environmental, and operational activities

OPERATIONS MANAGER (OM) - A senior manager with responsibility for the conduct of all operations within a building

PERMITTED RELEASE - A release of material, either airborne or waterborne, that is controlled or allowed under the conditions of a permit granted by a regulatory agency

PROCESS WASTE - (for the purposes of this document) Wastewater associated directly with industrial activities at RFP Sanitary waste such as liquids from restroom and kitchen facilities are not process waste

PROCESS WASTE TREATMENT PLANT, BUILDING 374 - The facility used to treat process wastes that have an activity below 200,000 picoCuries per liter (pCi/L)

PROCESS WASTE TREATMENT PLANT, BUILDING 774 - The facility used to treat higher level process wastes prior to treatment in the Building 374 process waste treatment plant. Building 774 also has processes for treatment of organic waste streams

PROTECTED AREA - The area of the RFP which is located within several physical security boundaries and in which most of the plutonium is used, processed, and stored The protected area was formerly known as the perimeter security zone

RASCHIG RING - Glass rings impregnated with boron which are placed in tanks containing radioactive solutions to absorb neutrons and thereby protect against criticality

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) - An act promulgated in 1976 with subsequent amendments that are codified in Title 40 CFR Parts 260-270 The regulation of the act provide for the protection of human health and the environment through proper management and minimization of hazardous wastes

REGULATED SUBSTANCE - Any substance, whether raw material or waste, that 1 is listed in Table 302 4, 40 CFR 302 4, 2 is defined as a hazardous waste in 40 CFR 261, 3 is listed in the Rocky Flats Material Hazards Manual and has a hazard rating greater than or equal to 2, or 4 spontaneously emits ionizing radiation

RELEASE - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, ejecting, escaping, leaching, dumping, or disposing of a material into the environment Any activity that involves the placement of a hazardous substance into any unenclosed containment structure is considered a release An unenclosed containment structure allows the hazardous substance to be exposed to the environment An unenclosed containment structure may allow the hazardous substance to emit or escape into the air, water, or soil

An unenclosed containment structure does not include industrial tanks that have vents or piping systems to prevent over-pressurization or to provide for material transfer or treatment as stated in 40 CFR Parts 302 and 355 RFP personnel have been trained and instructed to report to their management all unplanned releases in excess of one pound of solids or one pint of liquids

REPORTABLE QUANTITY (RQ) - That quantity of a compound the release of which requires the notification of off-site agencies such as the U S Environmental Protection Agency (EPA), the Colorado Department of Health (CDH), the National Response Center, the Department of Transportation (DOT), the Colorado State Oil Inspector, or the U S Coast Guard Listings of the compounds for which RQs exist can be found in the DOT regulations, the Clean Water Act (CWA), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), the Clean Air Act (CAA), and the Superfund Amendment and Reauthorization Act (SARA) regulations The various regulations cited above do not necessarily have the same reporting requirements, the same RQs, nor the same compounds listed as potential RQs

REPORTABLE RELEASE - Any release that involves a reportable quantity (as defined above) The presence of a reportable quantity of a hazardous substance in an unenclosed containment structure, whether the material was placed in the structure by design or due to an unplanned event, constitutes a reportable release whether or not a reportable quantity of the hazardous substance actually volatilizes into the air or migrates into surrounding water or soil as defined in 40 CFR Parts 302 and 355 Some materials have no reportable quantity and may not require reporting to off-site agencies

SAFETY LIMITS - Process variables required to protect the integrity of physical barriers or process controls which prevent the uncontrolled release of radioactivity At RFP these include Criticality Safety Operating Limits

SECONDARY CONTAINMENT - Physical structures provided for the purpose of containing the contents of a tank or other primary containment should the primary containment fail Secondary containment may be composed of various substances including soils, concrete, and asphalt and may be coated or lined

SEWAGE TREATMENT PLANT (STP) - A term synonymous with Wastewater Treatment Plant

SHIFT SUPERINTENDENT - That person occupying the position at the RFP which is staffed 24 hours a day that has the responsibility for initial coordination of emergencies and commitment of resources

SPILL - Any release of materials from a primary containment structure that is not specifically intended or controlled A spill may or may not constitute a release

SPILL CONTROL - Those activities and actions related to controlling a spill that has already occurred

SPILL PREVENTION - Those measures or structures that help to prevent the occurrence of a spill Spill prevention activities are considered best management practices (BMPs)

WASTEWATER TREATMENT PLANT (WWTP) - The facility that treats liquid sanitary wastes, cooling tower blowdown, evaporative cooler blowdown, photographic waste solutions pretreated to remove silver, and stainless-steel rinse water This facility does not treat wastes that are directly associated with production processes involving radionuclides

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CONTROL OF SWD Approved By Robert E. Fiehweg 9/25/92

SWD Regulatory Programs Manager Date

4 0 PURPOSE OF SPCC/BMP PLAN

The purpose of this SPCC/BMP Plan is to document the procedures, programs, and structure by which RFP prevents or minimizes the potential for significant releases of toxic or hazardous substances from the RFP to waters of the U S This SPCC/BMP Plan outlines and identifies the programs and actions at the RFP that comply with the requirements of SPCC and BMP programs as identified by the Code of Federal Regulations (CFR) and as identified in the existing RFP NPDES Permit The DOE is the designated permittee for the RFP NPDES Permit The responsibility for coordination of SPCC/BMP requirements on behalf of the DOE rests with the Surface Water Division (SWD) of Environmental Management (EM) within the RFP EG&G organization The SWD will utilize various groups within the RFP organization and will coordinate actions as appropriate to implement the requirements of the SPCC/BMP program The other EG&G RFP groups that have SPCC/BMP responsibilities include

Utilities	Plant Engineering
Plant Environmental and Waste Engineering	Waste Programs
Traffic	Remediation Programs Division
On-Site Transportation Committee	Fire Department

The specific requirements for this SPCC/BMP Plan are set forth in Part III (Page 24 of 27) of the most recent (1984) NPDES Permit The requirements for this Plan are

- Identification of individuals responsible for assisting RFP management in the implementation, maintenance, and updating of the Plan,
- Risk identification and assessment,
- Reporting and notification procedures,
- Materials compatibility,
- Good housekeeping,
- Preventive maintenance,
- Inspections and records,
- Security, and,
- Employee training

The NPDES Permit was last renewed in 1984 and was extended to June 1989 Timely reapplication was made in December 1988, but rather than being renewed, the existing permit was administratively extended until renewed In March 1991, the DOE entered into an agreement with the EPA, the NPDES Federal Facilities Compliance Agreement (NPDES-FFCA), which further modified certain provisions of the extended permit until renewal A permit application is scheduled to be submitted to EPA no later than October 1, 1992

This SPCC/BMP Plan combines the SPCC requirements of 40 CFR 112, and the BMP requirements of 40 CFR 125 The SPCC portion of the plan addresses procedures and design criteria for primary containment and spill prevention, as well as response to spills which occur Specific SPCC requirements are addressed in Section 8 of this Plan, although that Section of the Plan incorporates other portions of this Plan by reference

The BMP portion of the plan addresses prevention of water pollution from sources ancillary to the industrial manufacturing process BMPs are broad and may include processes, procedures, human actions or construction (EPA, 1979, EPA, 1988) BMPs are discussed throughout this Plan

The RFP has a material management philosophy consistent with the goals of the SPCC/BMP Plan which aims to protect both human health and the environment through the use of multiple levels of protection The first level involves spill prevention and BMPs where possible, including appropriate design of facilities, waste minimization and hazardous chemical substitution programs, material handling procedures, and systems integrity assurance programs These activities and programs serve to prevent the occurrence of releases and to minimize their impact The second level involves employee training, awareness, and safety/procedural programs The third level of protection involves the careful review of the circumstances surrounding those spills and releases that do occur in order to identify spill prevention and management practices that need revision

In the event of a spill, early control and response are achieved by spill containment measures, employee ability to recognize such an event and follow procedures that initiate response, a structured emergency response plan, and a highly trained and fully equipped Hazardous Material (Haz-Mat) Team In the unlikely event that a spill goes undetected or is of too great a volume to be handled by standard Haz-Mat Team methods, spill control will be handled by the engineered surface water control system that includes ditches from which flow can be diverted and spill control ponds that are managed for contingent spill control The spill control ponds are only used in the event that the spill cannot be otherwise managed and would probably migrate offsite Appropriate use of the ditches and ponds can prevent the off-site release of spills and can also allow RFP to take appropriate remedial actions for the treatment or mitigation of the spill

4 1 RESPONSIBILITIES

The SWD is responsible for developing, coordinating, maintaining, and updating the SPCC/BMP Plan The charter of the Surface Water Division is included as Appendix 1 To complete these tasks, the SWD will utilize the functions and expertise of other groups within RFP organization, particularly those groups with responsibilities relating to spill prevention and control In the past, there was an SPCC/BMP Committee which was responsible for implementation of the SPCC/BMP Plan This committee has been dissolved because various functional groups had the same responsibilities and performed the same tasks as the SPCC/BMP Committee.

Operations and organizations at RFP are constantly changing in order to better address problems and resolve concerns. Therefore, although the name of a group with responsibilities under the SPCC/BMP Plan may change, the SPCC/BMP responsibilities which that group held are still addressed by RFP Likewise, procedures, manuals, plans, standards, and other documents referenced in this plan are also subject to change Such changes will not result in an immediate revision of this SPCC/BMP Plan but will be included in the periodic updates

4 2 REFERENCES

EPA, 1979, NPDES Best Management Practices Guidance Document, EPA-600/9-79-045, PB 80 135221, December

EPA, 1988, Best Management Practices (BMPs) in NPDES Permits - Information Memorandum, Environmental Protection Agency, August 19

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CONTROL OF SWD Approved By Robert E. Fischer 9/17/92
SWD Regulatory Programs Manager Date

5 0 INTRODUCTION

5 1 GENERAL INFORMATION

1	Name of Facility	Rocky Flats Plant
2	Type of Facility	Government-owned and operated, contractor co-operated facility Part of the national nuclear weapons complex administered by the U S Department of Energy
3	Location of Facility	The RFP is located in northern Jefferson County, Colorado, almost equidistant from the cities of Arvada, Boulder, and Golden The facility, located at 105 degrees, 11 minutes and 30 seconds west longitude and 39 degrees 53 minutes and 30 seconds north latitude, is about 16 miles northwest of Denver RFP is located in Sections 1 through 4 and 9 through 15 of Township 2 South, Range 70 West, 6th Principal Meridian
4	Mailing Address	U S Department of Energy Rocky Flats Area Office P O Box 928 Golden, CO 80402-0464
5	Name and Address of Owner/Operator/Permittee	Owned, operated, and permitted by the U S Department of Energy (address above), Co-operated on behalf of DOE by EG&G Rocky Flats Inc Rocky Flats Plant P O Box 464 Golden, CO 80402-0464
6	Designated Person Responsible for this Plant.	Name T A Vaeth Title DOE Area Manager Phone 966-2025
7	SPCC/BMP Contacts	Name Jonathan Dion (DOE) Phone 966-5904 Name Georgene Porter (EG&G) Phone 966-8617
8	NPDES Permit Number	CO-0001333

9 Mission

The Rocky Flats Plant is currently in transition from a defense production facility to one whose planned future missions include

- environmental restoration,
- waste management,
- maintaining production contingency, and
- and eventual decontamination and decommissioning

A transition plan was provided to Congress in July 1992 This plan proposes activities necessary to effect the transition (DOE, 1992) Final approval of the plan is pending RFP operations will be consistent with the RFP value of conducting all operations with the utmost regard for ensuring safety and protection of the environment

5 2 ROCKY FLATS PLANT SETTING

5 2 1 General

The RFP covers approximately 6,550 acres of federally-owned land in northern Jefferson County, Colorado The RFP is bounded on the north by State Highway 128, on the west by a parcel of land east of State Highway 93, on the south by a parcel of land north of State Highway 72, and on the east by Jefferson County Highway 17 (Indiana Street) Access to RFP is gained from an east access road exiting from Indiana Street and a west access road exiting from State Highway 93 (Figure 5 1) Major facility structures are in an area of approximately 400 acres (the Controlled Area) located near the center of the 6,550 acre site Production, research, development, administrative, and support facilities at RFP are located in this Controlled Area The 400-acre area is surrounded by the buffer zone The buffer zone consists of approximately 6,150 acres of undeveloped land (with the exception of the landfill, guard posts, and a few administrative buildings) enclosed by a three-strand barbed wire fence marked with no trespassing signs

The RFP is situated at an elevation of approximately 6,000 feet It is on the eastern edge of an extensive and relatively flat terrace deposit known as the Rocky Flats Alluvium The terrace is approximately five miles wide and flanks the eastern edge of the foothills of the Rocky Mountains Surface water runoff from the plant is generally from west to east

5 2 2 Surface Water Flow

Surface water is carried from RFP via five ephemeral streams (DOE, 1980) which flow through or are adjacent to the RFP site North Walnut Creek, South Walnut Creek, Woman Creek, Coal Creek, and Rock Creek North Walnut Creek and South Walnut Creek join to form Walnut Creek, which is routed around Great Western Reservoir and discharges to Walnut Creek below the reservoir and eventually flows into Big Dry Creek and then the South Platte River Woman Creek originates west of RFP and flows eastward into Standley Lake or is diverted to Mower Reservoir which also flows into Standley Lake The flow out of Standley Lake is Big Dry Creek which flows into the South Platte River Rock Creek flows northwest from the plant into Coal Creek and drains portions of the buffer zone Coal Creek flows west and north of RFP and is joined by Rock Creek northeast of RFP Coal Creek flows into Boulder Creek, then St. Vrain Creek, and eventually the South Platte River Figure 5 1 shows the major streams on the plantsite

In addition to the natural drainages, there are two interceptor ditches to control runoff from the plant The West Interceptor Ditch diverts runoff from the headwaters of North Walnut Creek via the McKay Bypass Ditch to Walnut Creek west of Indiana Street. This allows the lower reaches of North Walnut Creek to carry runoff from the plant that has not mixed with upstream flows The South Interceptor Ditch collects runoff from the southern parts of RFP before it reaches Woman Creek and diverts the flow to Pond C-2 where it is sampled and treated if necessary prior to release The South Interceptor Ditch collects runoff and potentially spills from the southern portions of the Controlled Area

A series of detention ponds has been constructed to control the release of RFP discharges and to collect surface runoff from the Controlled Area Ponds located along North Walnut Creek are designated as Ponds A-1 through A-4, and ponds located along South Walnut Creek are designated as Ponds B-1 through B-5 The two ponds located along Woman Creek are designated Ponds C-1 and C-2 The ponds serve three main purposes for surface water management (1) surface water control for monitoring and possible treatment, (2) stormwater detention, and (3) emergency spill control in those instances where a spill cannot be adequately managed without use of the ponds Ponds A-1, A-2, B-1, and B-2 are currently reserved for emergency spill control The use of these ponds as emergency spill control represents a BMP A brief history of the use of these ponds, with particular emphasis on spill control, is provided below

Appendix 2 provides details of the history of construction and major management changes to the A-, B- and C-Series drainages leaving the RFP Prior to 1973 the ponds in existence on the drainages at the RFP were Ponds A (now known as Pond A-1), Ponds B-1, B-2, B-3, B-4, and Pond C (now known as Pond C-1) (Dow Chemical, 1972, Dow Chemical, 1973) These ponds were operated in series with the flow from one pond entering the next pond downstream until the final pond was reached and the water was discharged off plant-site In June, 1973 a construction project was completed on the three drainages that was to provide additional detention capacity and the capability of bypassing flows around some of the ponds (Shirk and Dresser, 1973, Dow Chemical, 1971) Some of the additional detention capacity provided at that time was due to new ponds, while the remainder of the detention capacity was provided by increasing the size of impoundments behind the dams by raising the dams (Dow Chemical, 1971) By mid 1974, Ponds A-1, A-2, A-3, B-1, B-2, B-3, B-4, and C-1 were in existence on the drainages of the RFP, with Ponds A-1, A-2, B-1, B-2, and C-1 all equipped to handle spills (Dow Chemical, 1974) The ponds were apparently still operated in series fashion until December 21, 1973 when Ponds A-2 and B-2 were isolated from the rest of the flow system to allow for management of untreated decontamination laundry wastewater A pipeline between Ponds A-2 and B-2 had been installed by December 21, 1973 to allow for transfer of water between these two ponds (Colston, 1974) Construction of Ponds A-4, B-5, and C-2 began in 1979 and was completed in 1980 along with surface water interceptor canals to allow for improved surface water management (Rockwell International, 1980, Rockwell International, 1981) After the construction of Pond C-2 and the South Interceptor Ditch, Pond C-2 has been the pond on the C-Series drainage available for spill control Since 1973, when Ponds A-1, A-2, B-1, B-2, and C-1 were first noted as capable of handling spills, the ponds on the three drainages have only been used for the diversion and separate management of spills or releases seventeen times The details of these spills or potential spill events are provided in Appendix 2 and are indicated with asterisks

Ponds A-1, A-2, B-1, and B-2 are reserved for emergency spill control when no other alternative is available Water that accumulates in these ponds as a result of runoff from the immediate watersheds is generally transferred to Pond A-2 after being analyzed Pond A-2 is equipped with a spray evaporation system that is used to keep the levels of all four spill control ponds as low as possible, thereby maximizing the volume available for spill control Pond B-3 receives treated effluent from the Wastewater Treatment Plant (WWTP) The remaining A- and B-series ponds receive runoff from the storm water management system of RFP, as well as runoff from their drainage basins Pond C-1 receives upstream flows from Woman Creek and Pond C-2 collects diverted flow from the

South Interceptor Ditch as previously discussed A detention pond is also located at the Present Landfill, however, water from this pond is not typically transferred unless overtopping is an immediate threat. Water from this pond is spray evaporated to minimize the need to transfer waters from this pond to other ponds

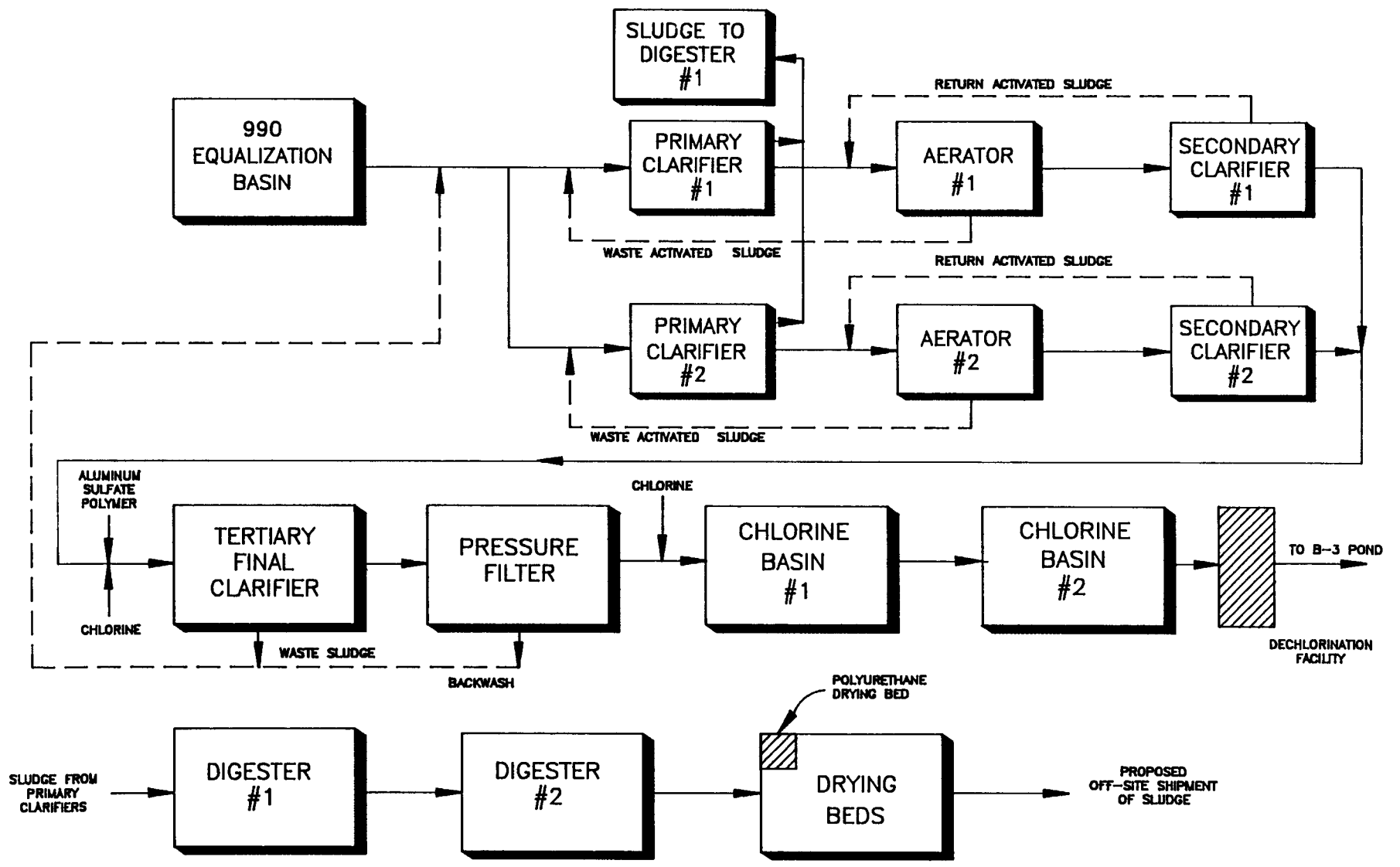
The ponds farthest downstream (Pond A-4 on North Walnut Creek, Pond B-5 on Walnut Creek, and Pond C-2 on Woman Creek) are referred to as the "terminal" ponds They were designed to provide additional volume for flood control The terminal ponds are NPDES-regulated discharge points and are monitored for specified water-quality characteristics before and during discharge A combined system of filters and granular activated carbon is available to treat water from the terminal detention ponds when necessary before being released

There is the capacity to transfer excess water in terminal Ponds B-5 and C-2 to Pond A-4 The transfer of water from Pond B-5 is done routinely while Pond C-2 has never been transferred (to date) The City of Broomfield opposes transfer of water at this time If Pond A-4 reaches capacity and discharge is needed, it is conducted in a controlled manner only after detailed assessment of water quality and DOE consultation with CDH Review of sampling and analysis results determines whether treatment of the water is required The City of Broomfield has constructed a diversion ditch around Great Western Reservoir downstream of Pond A-4 at Indiana Street which intercepts Pond A-4 discharges and routes them to Walnut Creek below the reservoir

5 2 3 Sanitary and Process Wastewater Treatment

All wastewater from processing activities (with the exception of sources such as rinse water from final cleaning of stainless steel parts and cooling tower blowdown) is treated in a separate process wastewater system which is isolated from other water treatment systems The process wastewater treatment system removes levels of radioactive and other contaminants by precipitation, followed by evaporation and recondensation for recycle in place of commercially available water

All sanitary wastewater is treated at the WWTP The WWTP is located in the South Walnut Creek basin and includes parallel activated sludge trains followed by tertiary clarification and filtration Figure 5 2 details the treatment system Discharge from this facility is to Pond B-3 in the South Walnut Creek basin (Figure 5 1) Water in Pond B-3 was previously spray irrigated onsite In consultation with EPA, this practice has been discontinued pending location of suitable application areas and revision of application practices due to concerns over possible mobilization of contaminants Effluent is currently discharged to downstream ponds Discharge from the plant is regulated under the NPDES FFCA which has required monitoring at six outfalls Figure 5 3 illustrates the relationship of the WWTP to the detention ponds Two separate non-process wastewater collection systems exist the first serves the Protected Area (PA) and the second serves the remaining areas Both flow to the equalization basins near Building 990, where the flows are combined The average weekday flow is 220,000 gallons per day (gpd) and the weekend average flow is 131,000 gpd Most of the flow is sanitary waste although other liquids enter the system including cooling tower blowdown, air washer/evaporative cooler blowdown, photographic waste (pretreated to remove silver), and stainless steel cleaning rinse (EG&G, 1991) Cooling tower blowdown in 1989 accounted for 17 million gallons of the estimated 75 million gallons of influent to the WWTP Generally, cooling tower water is blown down when total dissolved solids reach 700 to 1000 milligrams per liter (mg/l) Typical chlorine bleach or other standard biocide is added to cooling tower water to minimize bacterial growth and corrosion Air washer/evaporative cooling systems contributed an estimated 3 5 million gallons to the sanitary system in 1989 (ASI, 1991), however, in a more recent water balance (reflective of no production activities) the cooling tower blowdown flow accounted for approximately 4 7 million gallons of the influent to the WWTP (EG&G, 1992)



ROCKY FLATS WASTE WATER TREATMENT PLANT FLOW

EG&G ROCKY FLATS, INC
U.S. DEPARTMENT OF ENERGY

09/18/92 | FIGURE 5 2

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EG&G ROCKY FLATS SPILL PREVENTION CONTROL COUNTERMEASURES BEST MANAGEMENT PRACTICES PLAN	Manual Chapter No Page Effective Date	21000-SPCC/BMP 60 1 of 6 September 1992
CATEGORY 1	Organization	ENVIRONMENTAL MANAGEMENT

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert E Fiehweg 9/17/92

SWD Regulatory Programs Manager Date

6 0 WATER MANAGEMENT PROGRAMS AND REGULATIONS

This section describes the water management programs and studies that are related to various applicable regulations and agreements into which the RFP has entered The regulations and agreements are also briefly discussed Ultimately, the RFP plans to have a water management program that greatly reduces off-site discharge of waters that have the potential to carry contamination However, at the current time, the specific reports and plans are in preparation or under review System improvements implemented as a result of these studies, agreements, regulatory changes, and negotiations with authorities will be included in future updates of this document

6 1 REGULATIONS AND REQUIREMENTS

The RFP complies with many requirements and regulations driven by different branches of Federal and State governments Some of these regulations and requirements specifically address surface water discharges and impact SPCC/BMP issues

6 1 1 National Pollutant Discharge Elimination System (NPDES) Permit

The 1972 amendments to the Federal Water Pollution Control Act (referred to as the Clean Water Act or CWA) prohibit the discharge of any pollutant to navigable waters from a point source unless the discharge is authorized by an NPDES permit Efforts to improve water quality under the NPDES program have traditionally and primarily focused on reducing pollutants in discharges of industrial process wastewater and municipal sewage identifiable as point sources of discharge This program emphasis developed for a number of reasons At the onset of the program in 1972, many sources of industrial process wastewater and municipal sewage were not adequately controlled, and represented pressing environmental problems In addition, sewage outfalls and industrial process discharges were easily identified as responsible for poor, often drastically degraded, water quality conditions However, as pollution control measures were initially developed for these discharges, it became evident that more diffuse sources (occurring over a wide area or non-point sources), such as agricultural and urban runoff, were also major causes of water quality problems throughout the US At the current time, the NPDES program is undergoing change to better address non-point sources of pollution, and BMPs are often used to achieve this goal The RFP originally obtained an NPDES permit for its activities in 1974, with permit renewals granted in 1981 and 1984 During some of these periods, the existing NPDES permit was extended while a new NPDES permit was negotiated Beginning with the 1981 NPDES permit, an SPCC/BMP Plan was a requirement of the RFP NPDES permit. The RFP is currently operating under the terms of the 1984 NPDES permit and the NPDES-FFCA while a new permit is negotiated with the Environmental Protection Agency (EPA) The RFP will comply with the terms of the new permit when it is finalized

6 1 2 Agreement in Principle (AIP)

The AIP (DOE, State of Colorado, 1989) was signed by the DOE and the Governor of the State of Colorado on June 28, 1989 The intent of the AIP was to assure citizens of Colorado that any discharges from Rocky Flats do not adversely affect public health and safety or the environment The agreement is an extension of a memorandum of understanding that was signed between DOE and Colorado in 1979 that initiated monitoring and

assessment of terminal ponds prior to discharge The AIP adopted existing programs and created substantial new commitments for the RFP It also authorized a vigorous program of independent monitoring and guidance by CDH

Under the AIP, EPA, the CDH and the five municipalities with drinking water supplies immediately downstream of Rocky Flats (Broomfield, Federal Heights, Westminster, Thornton, and Northglenn) have the opportunity to sample the RFP ponds prior to and during surface water discharges for inorganic and organic chemicals and for radionuclides The CDH is provided with a split set of surface water samples for analysis and is consulted regarding the water quality prior to discharge

The AIP also requires the RFP to conduct a study of possible methods for eliminating discharges to surface waters at Rocky Flats Pursuant to this provision of the AIP, the Zero-Offsite Water-Discharge Plan was completed in 1991 The AIP also requires frequent meetings of RFP operators with CDH, EPA, and cities downstream of RFP to share water quality data These AIP-related activities constitute BMPs for protection of surface water and the general environment near the RFP

6 1 3 Interagency Agreement (IAG)

The Interagency Agreement (EPA, 1991a) is an agreement between DOE, EPA, and the State of Colorado signed in January 1991 This agreement specifies the roles of the parties in cleanup of certain contaminated areas at RFP The IAG clarifies and implements RCRA and CERCLA requirements for remedial actions at RFP

The EM department has compiled a comprehensive list of all known and suspected sites at which environmental media may have become contaminated with hazardous, radioactive, and mixed waste materials These sites are currently known as Individual Hazardous Substance Sites (IHSSs), but were previously called Solid Waste Management Units or SWMUs This list includes descriptions and all known release information for these IHSSs The IHSSs are grouped into sixteen Operable Units (OUs) based on potential threats to human health and the environment and on geographical location Each IHSS is included in only one OU Each IHSS will be investigated, and the need for remediation will be determined based upon the identified information Prior to full characterization and remediation of the IHSSs, site-wide monitoring activities are being used to identify the release of contaminants from them Should such a release be identified, appropriate action would be initiated under the terms of the IAG to prevent contaminant migration Of particular interest to this report is the monthly surface water sampling that covers the general RFP (Figure 6 1) This sampling is primarily driven by the IAG, but also constitutes BMPs for protection of the environment. Additional IHSSs may be identified, or the location of already known IHSSs clarified, through the Historical Release Report, an IAG-driven document, which was finalized in June 1992 The Historical Release Report is to be updated on a quarterly basis, following approval by the regulatory agencies

6 1 4 NPDES Federal Facilities Compliance Agreement (FFCA)

The NPDES FFCA (EPA, 1991b) is an agreement between DOE and EPA under Executive Order 12088 Its purpose is to achieve and maintain compliance with water pollution control standards of the Clean Water Act at RFP The NPDES FFCA includes revisions to NPDES monitoring requirements and requires the preparation of three compliance plans The "Sewage Treatment Plant Groundwater Monitoring Plan," the "Sewage Treatment

Plant Compliance Plan" (EG&G, 1990) and the "Chromic Acid Incident Plan" (EG&G, 1992b) address spill and water management improvements through proposed operating changes and capital equipment projects Some of the projects outlined in these plans are currently budgeted, under design and construction, or complete, and constitute BMPs for protection of surface water A revised Chromic Acid Incident Plan is scheduled for approval in September 1992 In addition, the Vadose Zone Monitoring Plan was prepared as a follow-up of the Groundwater Monitoring Plan and is being implemented to determine whether operation of the WWTP sludge drying beds has caused an impact to groundwater or the unsaturated zone

6 1 5 Colorado Water Quality Control Commission Regulations

The Colorado Water Quality Control Commission (WQCC) is appointed by the Governor and has been granted the authority to create or change water quality control standards or stream standards in Colorado The WQCC may set state-wide standards, or it may set site-specific standards or stream classifications During 1990 the WQCC adopted site-specific water quality standards for streams below RFP These standards are very strict, and resulted in the construction and operation of treatment systems consisting of filters and granular activated carbon at detention Ponds A-4, B-5, and C-2 These treatment systems were installed and operated in a best-faith attempt to meet the new site-specific surface water quality standards for surface water discharges from RFP Presently, the water in these ponds is managed as described in Section 5 2 2 It is currently proposed that any water with analytes that exceed the stream standards will be treated prior to discharge

6 1 6 Storm Water Regulations

The EPA recently completed regulations regarding storm water management and permitting The rulemaking on this issue was published on November 16, 1990 in the Federal Register (Federal Register, 1990) These rules require that Storm Water Discharge Permit applications be submitted to the appropriate regulating agency for storm water discharges from sites associated with industrial activity and for discharges from a municipal separate storm sewer system serving a population of 100,000 or more (Federal Register, 1990) The RFP is governed by these regulations and will submit a Storm Water Discharge Permit as part of the NPDES permit

The information required in the Storm Water Discharge Permit application generally includes outfall location and receiving water; a description of improvements to the site that may affect the stormwater discharges, a site drainage map, a narrative description of pollutant sources for each outfall, a certification that non-stormwater discharges do not take place at any stormwater outfall, a history of significant leaks and spills for the last three years, and chemical and physical discharge information Some of the required information is not readily available for RFP, but is being developed and assembled to the extent possible for submission with the NPDES permit application

6 2 PROGRAMS AND STUDIES

6 2 1 Surface Water Management Plan (SWMP)

The SWMP is under preparation in support of the overall environmental management system at the RFP A Draft SWMP was completed in July 1992 The purpose of the SWMP is to address surface water management concerns at the RFP and to provide a technically sound and publicly acceptable long-term solution to surface water management and disposition at RFP Four specific factors which supported the need for this plan are (1) DOE's obligation to protect the public and to comply with environmental regulations, (2) DOE's desire to foster sound water resources management techniques at the RFP; (3) the need to integrate the numerous activities at RFP related

to surface water management into a unified plan, and (4) the need to meet new stream standards downstream of RFP imposed in 1990 (EG&G, 1992a)

6 2 2 Zero-Offsite Water-Discharge Study

The Zero-Offsite Water-Discharge Study for RFP is being developed in response to the AIP (DOE, State of Colorado, 1989) between the DOE and the State of Colorado The agreement required DOE to "conduct a study of all available methods to eliminate Rocky Flats discharges to the environment including surface waters and ground water " Thirty subordinate studies were completed in support of the Zero-Offsite Water-Discharge Study The subordinate studies each contribute specific information needed to assess alternatives for discharge reduction, focusing on engineering and management alternatives The consolidation of the 30 studies is pending review and integration into other surface water management activities at the RFP (ASI, 1991) The Zero-Offsite Water-Discharge Study will become part of the on-site improvements of the SWMP as appropriate

6 2 3 Groundwater Protection and Monitoring Program Plan (GPMPP)

The Groundwater Protection and Monitoring Program Plan (GPMPP) has been prepared by RFP (EG&G, 1991) The GPMPP fulfills requirements of DOE Order 5400 1 and addresses the overall groundwater management program at RFP The intent of the GPMPP is to document groundwater testing and monitoring activities as well as the technical and regulatory requirements of those activities A further requirement of the GPMPP is to consider and effectively integrate the groundwater management activities with other ongoing environmental programs at the RFP, particularly the surface water management activities Because of the natural connections between the groundwater and surface water at RFP, it is possible for spills to impact groundwater, and therefore protection of groundwater resources is a legitimate concern in response to spills and other releases

6 2 4 Surface Water Monitoring Program

Surface water monitoring at the RFP currently consists of two separate, but closely related, programs The first program is that associated with NPDES permit compliance and involves outfall and pond monitoring to determine whether discharges are within acceptable limits These monitoring activities are defined by the NPDES permit and by the NPDES FFCA The results of these monitoring activities are reported at the Monthly Exchange of Information Meeting and are documented in the Monthly Environmental Monitoring Report as the Discharge Monitoring Report The Information Meetings are held monthly between the RFP, CDH, and the surrounding cities that participate in environmental monitoring related to RFP NPDES compliance and appropriate management activities are identified through this monitoring program

In addition to the above monitoring program, there is also a site-wide surface water monitoring program which was established as a part of the site characterization activities for the RFP This surface water monitoring program covers the general RFP (Figure 6 1) The purpose of the site-wide monthly surface water sampling program is to obtain information for evaluating the significance and impacts of potential contaminant releases to surface waters In addition to collecting samples for geochemical analyses, monthly flow measurements are made and used to calculate water balances, infiltration rates, and to distinguish baseflow from runoff along selected stream reaches Seeps are monitored for both flow and water-quality characteristics The Draft Surface Water Management Plan (EG&G, 1992a) describes the data-collection program in some detail The surface water data information is used to better characterize the RFP and to identify potential needs in other environmental programs such as NPDES and BMPs The monitoring results are also reported in site characterization and site remediation related documents

6 2 5 Watershed Management Plan

The Integrated Watershed Management Plan (IWMP) currently under development. The purpose of the IWMP is to establish guidelines for management of the plant, animal, and mineral resources on the federal property that comprises the watersheds at the RFP Establishing appropriate guidelines for RFP operations will allow maintenance and environmental restoration activities at RFP to continue and ensure protection of healthy wildlife habitat The primary driver for this IWMP is the effective control of weeds The presence of weeds is extensive throughout the CA and the buffer zone Removal of these weeds requires that RFP consider the concerns of federal and state regulators as well as the groups within EG&G responsible for various aspects of the facility operations

6 2 6 Medical/Infectious Waste Management Plan

The Medical/Infectious Waste Management Plan is used as a guide for generators to manage medical/infectious waste This plan includes requirements and recommended BMPs for the generation of medical/infectious wastes

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EG&G ROCKY FLATS
SPILL PREVENTION CONTROL COUNTERMEASURES
BEST MANAGEMENT PRACTICES PLAN

CATEGORY 1

Manual 10000-SPCC/BMP
Chapter No 7 0
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Effective Date September 1992
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TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert E. Fickweg 9/17/92
SWD Regulatory Programs Manager Date

7 0 AREAS SUBJECT TO BMP REQUIREMENTS

7 1 GENERAL STATEMENT

The RFP is a complex industrial facility that uses thousands of different raw materials, utilizes several different processes, and creates different types of waste The intent of this section is to identify those general groups of equipment or systems that have the potential to release hazardous materials to the soil or receiving waters Because of the vast quantity of individual components, and because system and process changes are likely to be made, it would be futile to specifically identify all minor components ancillary to plant systems from which a spill might occur This section identifies those potential high-risk systems that could cause major releases, and that are subject to BMP requirements

Sections 7 and 8 of this Plan have considerable subject area overlap This is due to the fact that BMPs identify and drive spill prevention measures This section of the Plan will identify those RFP systems to which BMPs are broadly applicable, along with the BMP programs and plans currently underway The BMP program or plan-specific files contain the details regarding specific units or systems in need of upgrade

A generalized discussion of areas in which a spill might occur, along with a prediction of flow direction and rate of flow is provided in Appendix 3 Areas in which adequate BMPs have been implemented are not high-risk areas although they may have been potential high-risk areas if it were not for the BMPs Also, since the announcement in January 1992 of the end of the defense-related mission of the RFP, a plan for future RFP activities has been under preparation This plan could significantly affect which facility tanks and areas of the RFP will be used in the future

7 2 PROCESS WASTE SYSTEM

The process waste system at RFP has two treatment facilities and several process waste lines and 20 valve vaults to convey liquid process wastes to and from the treatment facilities The process waste lines move liquid wastes from Buildings 122, 123, 231, 371, and 559, as well as the 400, 700, and 800 complexes to the treatment facilities in Buildings 374 and 774 Figure 7 1 illustrates the process waste lines outside of the buildings, including the solar evaporation ponds The process waste lines and valve vaults that are located outside of buildings have been identified as potential high-risk areas The process waste lines have secondary containment, however, breakage of the chase pipes (secondary containment) has resulted in leaks in the past. Some valve vaults are subject to groundwater infiltration The possibility of overflowing in the event of a major leak exists, however, leak detectors are continuously monitored to prevent or minimize flooding and overflows The implementation of the noted BMPs to this system prevents it from being considered a high-risk area

The use of solar evaporation ponds to manage some process wastes began in 1953 Presently, the solar evaporation ponds are not receiving process waste, but still contain some waste materials Groundwater contaminated with nitrates and nitrate impacts on North Walnut Creek have been historical problems near the solar evaporation ponds because of seepage during their use In response to these problems, a groundwater seepage collection system (the Interceptor Trench Pump House [ITPH] System) was constructed Failure of the ITPH

System or a flow that exceeds the capacity of pumps could impact North Walnut Creek For these reasons, the solar ponds are a high-risk area Closure of the ponds, under the terms of the AIP and the IAG, is planned Until the closure activities result in removal of all free liquids and remediation of other environmental problems at the solar evaporation ponds, these units and the ITPH System are high-risk areas subject to the identification of additional spill prevention measures

7 3 TANKS

There are over two thousand tanks at the RFP Many are directly associated with production processes and are located in the production buildings Other tanks are part of the process waste system and are RCRA-regulated Production or process waste-related tanks are secondarily contained by either the building or an engineered secondary containment In either case, a tank provided with secondary containment is not considered a high risk unit

There are also chemical feed and fuel oil tanks on site that are outdoors Some are secondarily contained with epoxy-coated concrete containments and are not considered to be high risk Other feed and fuel tanks that are outdoors are not secondarily contained or have inadequate secondary containment All outdoor tanks with a capacity of over 100 gallons (or 800 pounds) that contain hazardous substances and are without adequate secondary containment are considered high-risk areas subject to the identification of additional spill prevention measures Adequate secondary containment is defined in Plant Standard SM-136 (Rockwell International, 1989) for new tanks and includes concrete dikes, or berms lined with impervious material, with capacity to contain the entire contents of the largest tank within the secondary containment and the volume of a 25 year, 24 hour storm event (3 25 inches)

A survey of outdoor tanks has been completed and provides information regarding tank construction material, contents, volume and throughput (EG&G, 1992a) Additional surveys of all tanks on plantsite (including indoor and nonhazardous) will be performed under the comprehensive Tank Management Plan This program will be implemented as funding becomes available The Tank Management Plan will provide an overall system for tank management which includes tracking tank integrity In particular, materials of construction and containment will be evaluated These evaluations are needed in order to provide for appropriate preventive maintenance operations and will be used to prioritize tanks for replacement or upgrade Tanks will be visually inspected and metal tanks will undergo non-destructive testing as the program progresses Future ultrasonic thickness testing will be used to aid in the determination of corrosion rates The RFP Engineering Department will determine the number of readings required to determine corrosion rates and testing frequencies for particular tanks The comprehensive Tank Management Plan is a requirement of the Chromic Acid Incident Plan under the FFCA

The Tank Management Plan will use formal design, testing, and inspection standards for tanks (RFP Plant Standards) in evaluating tank systems The particular plant standards of note to the Tank Management Plan are discussed below These Plant Standards are

SM-136 "Standard for Tanks Containing Regulated Substances" (Rockwell International, 1989),

SM-137 "Standard for Inspection of Tanks or Piping Systems, Pressure Vessels, and Pressure Relief Valves" (EG&G, 1990), and

SM-138 "Standard for Design of Secondary Containment for Hazardous Liquids" (in preparation)

SM-136 , "Standard for Tanks Containing Regulated Substances," requires that all new tanks or tanks undergoing a "major repair" (as defined in SM-136) and containing a reportable quantity of a regulated substance, and all RCRA waste tanks, be designed and constructed to meet the following criteria

- Secondary containment by liner or vault designed to contain the contents of the largest tank and precipitation from a 25-year, 24-hour storm event if the tank is outdoors,
- Secondary containment by double-walled tanks must completely envelope the tank and be protected from corrosion,
- Means for detection of leaks for all tank systems,
- High level alarms for all primary tanks that are not continuously attended,
- Level indicators for both manually and automatically filled tanks, and
- Automatic conveyance equipment for evacuation of fugitive liquids in secondary containment is prohibited

SM-137, "Standard for Inspection of Tanks or Piping Systems, Pressure Vessels and Pressure Relief Valves," recommends inspection intervals for tanks The inspections include visual inspections for cracks, distortion or corrosion of tanks, piping and secondary containment, hydrostatic testing of tanks, and ultrasonic thickness testing

SM-138, "Standard for Design of Secondary Containments for Hazardous Liquids," is currently in preparation, and will provide further design criteria

The survey of all tanks by Facilities Engineering is anticipated to be completed in November 1993 (EG&G, 1992b) Tanks of concern will be considered high-risk tanks if the intent is to use these tanks in the future If, however, future use of the tank is not intended, the tank will no longer be considered a tank of concern if it has had all residual materials removed by reasonable methods and flushed at least once with a suitable material to remove additional residuals A list of outdoor industrial tanks is provided in Appendix 4

7 4 TANK LOADING AND UNLOADING AREAS

Tanks that are physically loaded to or unloaded from tanker trucks or other containers that are not hard piped to the tank are potential areas for spills to occur If the area where the connection between the two containers is made is not indoors or otherwise adequately secondarily contained, then it is a high-risk area and is subject to BMPs Typically these BMPs can include use of dry disconnects and adherence to written procedures for material transfer specific to the tank that comply with DOT requirements At RFP, most outside tanks and underground storage tanks that are filled from a vehicle do not have secondary containment around the loading area and do not currently have written procedures that address material transfer The tank loading and unloading facilities are in the process of being identified

7 5 BUILDING DRAINS

Buildings at RFP are equipped with floor drains that lead to either the sanitary or process wastewater treatment facilities, and footing drains that drain in most cases to the storm water management system All drains in a room or area containing potentially hazardous substances including solvents, oils, paints, and PCBs or drains located in Radiation Control Areas have been identified as being high risk The Drain Identification Study (DIS) is underway to positively identify such drains and to determine the fate of any liquid entering such a drain. This study is a requirement of the Chromic Acid Incident Plan of the FFCA Until this study has been completed and the appropriate engineering and/or management changes made, the drains remain a potential high-risk pathway

for spills inside buildings and are subject to BMPs Final completion of DIS tasks, including corrective actions, is scheduled for March 1996

7 6 SEWAGE TREATMENT PLANT AND SANITARY SEWER SYSTEM

The WWTP is subject to fluctuations in effluent quality due to changes in influent loading, influent quality, and spill events that enter the sanitary sewer system Any disruptions that result in violation of the NPDES Permit require notification as outlined in Figure 7 2 The WWTP is subject to BMPs and several projects are ongoing or have recently been completed to improve the WWTP influent and effluent monitoring

An on-line respirometer provides sensitive real time indications of toxicity by indicating the level of microbial activity once implemented The NPDES FFCA required the development of measures for containing potentially toxic influent to protect the WWTP and downstream waters One proposed design for influent storage is to upgrade Building 990 to a storage facility for spill response This would be done by utilizing the equalization basins as influent storage for storage of wastewater potentially impacted by a spill event The plan calls for controlling the two separate waste collection systems by remotely operated motorized valves These proposed valves could be set so that only the flow from that area (PA or non-PA) where the spill occurred would go to the storage basins Each basin has a 60,000-gallon capacity, and thus, together, they could store one day's average flow from either the PA or the non-PA collection system (100,000 to 120,000 GPD) Flow from the collection system not impacted by the spill would be diverted around the equalization basins Influent/effluent storage will be addressed through the NPDES FFCA

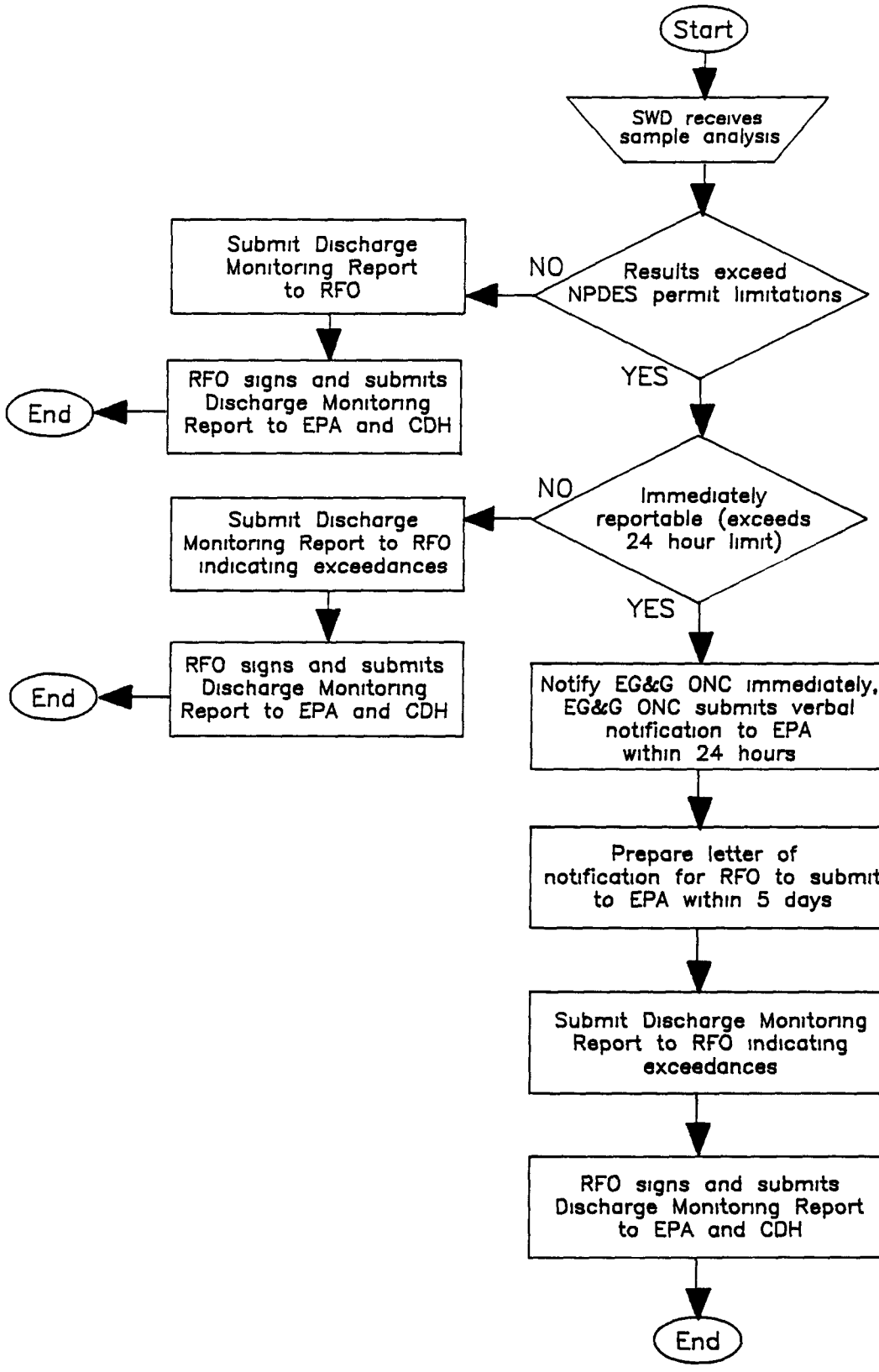
The sanitary sewer system is also subject to BMPs Leaks in sewer lines are a potential threat to groundwater and surface water at RFP The threat of hazardous materials entering the sanitary sewer system will be diminished by actions taken in response to the DIS Nevertheless, waters at RFP could be adversely impacted by the sanitary sewer system Figure 7 3 details the major components of the sanitary sewer system Due to the implementation of BMPs (such as the WWTP influent/effluent monitoring and the DIS) at the WWTP and sanitary sewer system, these systems are not currently considered high-risk areas

7 7 INDIVIDUAL HAZARDOUS SUBSTANCE SITES

Individual Hazardous Substance Sites (IHSSs) are potential high-risk areas subject to BMPs because of their potential to release hazardous contaminants into surface and ground waters. These IHSSs are monitored to identify releases through the monthly surface water monitoring program and through the stormwater monitoring program Identification of contaminant releases from an IHSS will be addressed through the process identified in the IAG Figure 7 4 shows the locations of the IHSSs

7 8 HAZARDOUS WASTE MANAGEMENT AREAS

A large number of hazardous and mixed waste management areas exist at the RFP The locations and general operating procedures for these units are documented in either the State RCRA Permit for the US DOE Rocky Flats Plant ID #CO7890010526, which was issued in October 1991 and has been amended a number of times since; or in the various RCRA Permit Applications and amendments that have been made to the CDH In general, the hazardous and mixed waste management areas are in compliance with the RCRA requirements applicable to each area Theses RCRA requirements, such as secondary containment requirements for hazardous waste storage tanks, are typically adequate to protect the environment and constitute BMPs However, some hazardous waste management areas may require upgrades to adequately protect the environment and thus are subject to BMPs



SURFACE WATER DIVISION (SWD) NPDES PERMIT VIOLATION NOTIFICATION RESPONSIBILITIES

EG&G ROCKY FLATS, INC.
U.S. DEPARTMENT OF ENERGY

09/18/92 | FIGURE 7.2

The hazardous waste management areas subject to BMPs have been identified in RCRA documents, IAG documents, and other documentation between the RFP and CDH or EPA

7 9 FUTURE IDENTIFICATION OF AREAS SUBJECT TO BMP REQUIREMENTS

It is possible that in the future there will be an event at RFP that will demonstrate the existence of high-risk areas not previously identified, as was the case with the Chromic Acid Incident The Chromic Acid Incident of February 22, 1989, demonstrated that areas not considered high risk can have a profound impact on plant operations In this incident, chromic acid was spilled from a tank inside a building and eventually found its way to the WWTP This revealed many inadequacies in the buildings, WWTP instrumentation and operation, and other RFP systems As a result of this event, a number of studies and activities were undertaken to prevent recurrence of this or similar problems The Drain Identification Study and the Tank Management Plan are examples of the actions implemented because of the Chromic Acid Incident Plan of the FFCA (EG&G, 1992c) WWTP upgrades are required under the NPDES FFCA Similar appropriate actions will be taken should new high risk areas be identified in the future This may include studies and corrective actions that constitute BMPs New high risk areas and BMPs for these areas will be identified through the evaluation of occurrences that are reported to the Occurrence Notification Center A routine aspect of reporting an occurrence is the evaluation of the occurrence for "lessons learned " The entire process attendant to the reporting of an occurrence is described in greater detail in Section 9 of this Plan

7 10 REFERENCES

EG&G, 1990, Rocky Flats Plant Standard Number SM-137, Standard for Inspection of Tanks, Pressure Vessels and Pressure Relief Valves, May

EG&G, 1992a, Air Pollutant Emission Notice, Outside Industrial Storage Tanks, EG&G Rocky Flats, April 24

EG&G, 1992b, Revision M to the TS-7 Corrective Action Milestones, June 19

EG&G, 1992c, Federal Facilities Compliance Agreement, Chromic Acid Incident Plan, August 10

Rockwell International, 1989, Rocky Flats Plant Standard Number SM-136, Standard for Tanks Containing Regulated Substances, March

EG&G ROCKY FLATS	Manual	21000-SPCC/BMP
SPILL PREVENTION CONTROL COUNTERMEASURES	Chapter No	8 0
BEST MANAGEMENT PRACTICES PLAN	Page	1 of 12
	Effective Date	September 1992
CATEGORY 1	Organization	ENVIRONMENTAL MANAGEMENT

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By [signature] SWD Regulatory Programs Manager 9/25/92 Date

8 0 SPILL PREVENTION CONTROL COUNTERMEASURES

This section of the SPCC/BMP Plan summarizes spill prevention and control structures that are in existence at the RFP and follows the outline for an SPCC Plan required in 40 CFR 112 7 For this discussion, a spill is considered to be a release of regulated substances from the primary containment Spill prevention refers to measures taken to prevent material from being released from the desired primary containment Spill control refers to the measures provided to control a spill after primary containment is breached

In general, spill prevention at RFP is achieved through appropriate engineering design, management practices, and procedures Appropriate engineering design is ensured through the use of "Rocky Flats Plant Standards " These standards state the minimum design requirements applicable to the design of a given item Appropriate management practices include periodic integrity testing and inspections of hazardous material tanks and equipment These practices should identify problems with equipment prior to the compromise of the primary containment Appropriate procedures include written documentation that describes, in detail, how certain activities are to be undertaken, for example, the unloading of transportation vessels into bulk storage tanks Spill prevention and control structures qualify as BMPs as allowed for in the BMP regulations (40 CFR 125 104(b)(4)) Therefore, this section of the Plan also addresses those requirements that specify that each facility component or system shall be considered in BMP programs (40 CFR 125 104(b)(2)(i))

Spill control is achieved through secondary containment and flow guidance structures designed to control and/or mitigate adverse environmental affects if a spill occurs Specific containment measures exist in all buildings containing hazardous materials, and for most areas where hazardous materials are stored exterior to buildings These containment measures were either built with the facility or were later added to the facility

8 1 PREDICTION OF RATE, QUANTITY AND DIRECTION OF SPILLS

At locations where spills are likely, a prediction of the direction of flow, rate of flow, and total quantity of material discharged should be provided This information for the RFP is provided in this section, Appendix 3, and in Plate 1 This information has been provided for each of the drainage basins in or adjacent to the RFP Controlled Area The objective of many of the activities and programs discussed in this Plan is to prevent releases of harmful materials to the environment. At the current time all known areas where releases are likely have been addressed or will be addressed shortly through spill prevention or BMP measures However, in the unlikely event that such a release does occur, it is expected that that release would be captured within RFP facilities Some portions of the A-, B- or C-Series drainages and the ponds located on these drainages may be used to capture such a release Despite this, a prediction of the direction of flow, rate of flow and total quantity of such a release is provided below The locations where such a release is likely was determined based on the location of non-secondarily contained tanks containing a regulated substance or, for an area where no such tanks exist, the likely location of a spill was defined as a loading/unloading area where regulated substances are handled. The 231B tank (Tank 242 on Plate 1) was an exception to the above, it was used due to the large size of the tank even though secondary containment for the tank is provided

The approximately 400-acre Controlled Area of the RFP is drained by six separate drainage basins Each of these drainage basins, some of which also drain land immediately adjacent to the Controlled Area, flows to a specific monitoring point These drainage basins have been evaluated for the proximity of outdoor storage tanks or loading and unloading areas that handle regulated materials For those drainage basins that have such units, the units from which a spill might occur that are expected to have the maximum and minimum flow times to the monitoring stations have been identified The drainage basins and units at which handling of regulated materials occurs are identified on Plate 1 Plate 1 also identifies the route in which a spill would flow For the purposes of calculation, the maximum quantity that could be released from these various units is the tank capacity In the case of the Building 130 loading area, the maximum possible spill is 55 gallons from a ruptured steel drum The flow times for these spills have been calculated for each of these units based on the surface flow rate of water Materials that are more viscous than water would travel slower than water over the same distance, thereby allowing additional time for response to the release The other units in a drainage basin that contain regulated materials should have flow times somewhere between the minimum and maximum stated times The results of these calculations for each drainage basin are presented in Appendix 3 Containment of a spill is possible downstream of the monitoring points identified in Plate 1

8 2 CONTAINMENT AND DIVERSIONARY STRUCTURES

At the RFP a number of containment and diversionary structures are in place that will help prevent releases from reaching navigable waters Most tanks and units handling regulated materials at the RFP are provided with full or partial secondary containment This secondary containment varies, but generally consists of stainless steel, coated concrete, or earthen berms All tanks will be evaluated for appropriate secondary containment under the provisions of the comprehensive Tank Management Plan when implemented, and a priority list will be developed for providing secondary containment at tanks that require secondary containment All permanent tanks at the RFP are located within the Controlled Area of the plant, and are included in a managed drainage system that allows for diversion of releases to various tanks, structures, and, if necessary, to retention ponds for proper management Depending on the exact location of a spill, curbing, sumps, and collection systems may be available for management of the spill Response to a spill will primarily be provided by an RFP Hazardous Materials Response Team This team is trained and equipped to respond to emergency situations involving hazardous materials Absorbent materials, boom materials, personnel protective equipment, and neutralizing chemicals are available to the Hazardous Materials Response Team personnel in their mobile van This team will contain the spill and stabilize the situation Once a spill is contained, adequate treatment is assessed and will be provided

Treatment systems at the RFP include two process waste treatment systems (varying in the levels of radioactive substances that can be treated), an evaporator treatment unit, a sanitary wastewater treatment plant, and activated carbon treatment units Other treatment systems are in the planning or construction stages

The following is a brief discussion of the engineering design, management practices, and procedures that are of particular concern to RFP structures and operations that are not storage tanks Storage tanks are specifically addressed later in this section of the Plan

Process Waste System

Process waste lines exterior to RFP buildings are double contained, or are inspectable where not double contained Secondary containment is provided by chase pipes that are open to the valve vaults to which pipes run There are bottles and sensors within the vault structure at the end of the chase pipe If the primary pipe leaks, the liquid will flow through the chase pipe to the downgradient valve vault The bottle at the chase pipe end will fill with fluid and the sensor will trigger an alarm in Building 374 and Liquid Waste Operations personnel will respond

The valve vault will be visually checked Any waste present that was not removed by the sump pump will be pumped to either a liquid waste dumpster or a truck for transfer to the Building 374 process waste system

Process waste lines which are located within central building areas are being evaluated Generally they are single contained but are located above the floor These lines are therefore inspectable The building itself provides the pipes with secondary containment Process waste lines that are in common areas of buildings, such as offices, are additionally double contained by chase pipes

Valve Vaults

The valve vaults that are part of the process waste system were originally constructed of concrete and were not water tight Groundwater is able to enter the vaults under certain hydraulic conditions To reduce groundwater inflow, Hypalon liners were placed in the valve vaults such that a space remained between the liner and the vault surfaces Groundwater that collected in this space was pumped via a sump pump in the bottom of the vault into the process waste system The Hypalon liners also provided secondary containment for the process pipes

It was determined that the original Hypalon liners did not fully prevent the migration of liquids between the groundwater and the containment area A program was emplaced to upgrade all liners in the process waste system valve vaults The Hypalon liners have been stripped out of the valve vaults and have been replaced with high density polyethylene liners A drain net system was installed with the new liners to aid the flow of infiltrated groundwater to the sumps Collected groundwater in the sumps is pumped to the process waste system All of the new liners have been tested and certified by an independent Professional Engineer

Process Waste Drains

Many buildings at RFP have process waste drains in the floors of areas where spills of hazardous materials are possible The floor is slightly sloped so that any spilled liquid will flow towards the floor drain Liquids entering the drains will flow into the process waste system Some areas of buildings have pits in the floors that are used for many purposes If a spilled liquid enters a pit, it will be evacuated by a sump pump and transferred to the process waste system

The internal drains in the six plutonium buildings were recently evaluated and areas that need corrective action are identified in Drain Verification Activities (EG&G, 1990a) Preparation of a comprehensive Drain Identification Study (DIS) has been initiated by the SWD in accordance with the Chromic Acid Incident Plan of the FFCA to ensure that radioactive or chemically-contaminated liquids cannot inadvertently be released to the environment or enter the sanitary waste system and thereby potentially violate the NPDES permit (EG&G, 1992c)

Plenum Drain Lines

Plenum drain lines are used to control contaminated water resulting from the operation of the sprinkler systems in the filter plenums In case of a fire, the sprinkler system may activate cooling of the first stage high efficiency particulate air (HEPA) filters in the plenums with water to prevent the burning of these filters In some plenums, the fire water then drains into the plenum drain lines which direct the flow into raschig ring-filled tanks for safe storage Liquid contained in these tanks would either be treated in the process waste system or processed to recover plutonium The sprinkler system cooling water collects on the floor of plenums not fitted with drain lines

Container Storage and Handling Areas

There are many types of container storage and handling areas at RFP RCRA-regulated storage areas are maintained and inspected as required by the RCRA regulations This includes proper aisle spacing, material compatibility, and inspections Loading docks that handle hazardous waste are not regulated RCRA units but are subject to daily inspections by the Waste Inspections group

Handling and storage areas for non-waste hazardous materials, such as raw chemicals, are generally not isolated from working areas Also, supplies are not generally stored out of doors for extended periods of time These facts, coupled with RFP policy that all personnel on plant site have an obligation to immediately report any release or threat of release of hazardous materials, mitigate the potential for significant release of hazardous raw materials to the environment

Transformers

Most non-pole-mounted liquid-filled outdoor transformers at RFP that are under the control of EG&G have been provided with secondary containment. This secondary containment is designed to contain the contents of the transformer and some precipitation Some transformers that are the property of Public Service Company have also been provided with secondary containment Pole-mounted transformers are not secondarily contained It is the goal of the RFP that no transformers with greater than 50 ppm polychlorinated biphenyls (PCBs) be in use outdoors Currently, this goal is being met and there is an ongoing survey of outdoor transformers to verify the status of outdoor transformers Some indoor transformers that are ancillary to equipment (e g , welders) do contain PCBs

To provide adequate capacity for secondary containment, the SWD has directed the pumping of accumulated precipitation if no oil sheen is visible on the water surface If an oil sheen is visible, the water is sampled and handled in accordance with the "SWD Implementation of the Control and Disposition of Incidental Waters" (EG&G, 1991b), which is discussed in detail in Section 9 6

Due to the historical use of PCB transformers, there are areas on plantsite that have been contaminated As these areas are identified, they will be evaluated and remediated as appropriate

Footing Drains

As discussed earlier, footing drains are located at the foundation footings of many RFP buildings Most of these drains collect groundwater and divert it into the surface drainage ditches Any large spill within a building could potentially enter the footing drains and be transported to the surface water control system This liquid would then be retained and sampled in the surface water control ponds and only released in compliance with the NPDES permit

The Drain Identification Study is currently underway to identify drains that may adversely impact operations of the WWTP or the environment. Investigation of footing drains will be conducted as part of this study Any footing drains determined to be connected to the sanitary waste system will be corrected to the satisfaction of SWD (EG&G, 1992c)

Wastewater Treatment Plant

The sewage treatment plant is staffed 24 hours a day with certified operators that are capable of identifying and controlling system upsets System upsets are detected through instrumentation as well as visual inspection for such things as discoloration or extensive foaming In addition, NPDES FFCA mandated upgrades to the system are in the process of finalization (WWTP Influent Instrumentation, WWTP Autochlorination-Dechlorination, and WWTP Effluent Instrumentation) These upgrades will assist the personnel in detection of influent and system upsets (EG&G, 1992b) WWTP Operators have written procedures to identify, divert, hold, and test hazardous or toxic sewage flow into the south basin at Building 990 in the case of a release of unauthorized material into the system (EG&G, 1991e)

At the present time, only one of the two activated sludge trains is in use These are designed to run in parallel and each consists of a primary clarifier, aerator, and a secondary clarifier Building 990 houses two equalization

basins with a capacity of 60,000 gallons each and aeration and monitoring instrumentation. Presently, all flows pass through the north basin only, and the south basin is reserved for emergency overflow In the case of a spill entering the sanitary sewer system, flow can be diverted to the south basin and stored until characterized This aids in the protection of the WWTP from being impacted by spills If the spill makes its way to the WWTP, it can be contained by stopping the flow through the train that is operating A spill could be contained by holding contaminated waters in one of the equalization basins and in the treatment train already impacted Non-contaminated flows would be diverted through the other equalization basin and the other activated sludge train

Because the effluent from the WWTP is carefully monitored for radionuclides, it was necessary to develop a procedure to eliminate medical radioisotopes from the sanitary wastewater Radionuclide isotopes are commonly used offsite for medical purposes These radionuclides are ingested by the patient If an employee or visitor to RFP had recently been subject to such diagnostic methods they could affect the quality of the WWTP effluent by urinating in the sanitary sewer system The Health and Safety Practice "Medical Radionuclide Procedure Follow-up" (EG&G, 1991c) has been developed to address this issue This procedure requires employees that have been subject to such treatment to report to Occupational Health when they return to plantsite The amount and type of radionuclide ingested is determined and Internal Dosimetry personnel will calculate how long these would be retained in the body The individual that was treated is then required to dispose of their urine offsite for the stated time period External Dosimetry evaluates the effects that the treatment will have on the person's dosimeter (if he wears one) and takes appropriate action Such personnel are restricted from radiation control areas for the duration of the time period determined by Internal Dosimetry

Sludge Management

Sludges generated at the RFP include sludges from process waste treatment operations and sludges from sanitary wastewater treatment

The sludges from process waste treatment consist of a mixture of hazardous constituents and radioactive materials These process waste sludges are therefore subject to the hazardous waste regulations Management of process waste sludges is currently conducted to comply with all RCRA Interim Status Requirements Disposal of process waste sludges, when permitted, will be at off-site DOE locations At the current time, these sludges are being stored at the RFP awaiting approval for off-site disposal A more complete discussion of the management of process waste sludges can be found in the RCRA Part B Permit Applications

WWTP sludge at the RFP are managed as a low-level radioactive waste This is primarily due to the historical introduction into the sanitary sewer system of laundry decontamination waters which had low levels of radioactive contamination associated with them The sludge is currently removed from the WWTP and applied to sludge drying beds where the sludge is allowed to dry to a minimum of 43% solids by weight Once this solids specification has been reached, the sludge is removed from the beds and boxed for off-site disposal The sludge is currently being stored at the RFP awaiting approval to ship to the Nevada Test Site Procedures and requirements for the adequate handling of the sludge have been written and are in the process of approval These include

- Sludge Sampling and Testing,
- Turning Sludge Beds, and
- Packaging

At the current time, the sanitary sludge drying capabilities of the RFP are inadequate to handle the quantities of sludge generated This inability to handle the sludge in a timely manner may be impacting the quality of treatment provided by the WWTP Therefore, a belt filter press and thermal sludge dryer are under construction and

expected to be completed by October 1992 When online, these facilities will improve sludge handling capabilities at the RFP so that sludge management should not impact the quality of treatment provided by the WWTP

As required by the NPDES FFCA, a plan has been written and is being implemented to determine whether operation of the sludge drying beds has caused an impact to groundwater or the unsaturated zone beneath the beds Should the results of this study indicate an impact, appropriate changes in operations and facilities will be identified and implemented

Hazardous and Solid Waste Management

The RFP currently generates, treats, stores, and ships off-site hazardous waste and mixtures of hazardous waste and radioactive materials The RFP does not dispose of hazardous waste or radioactive waste on plantsite The RFP generates, treats, and disposes of solid sanitary waste on plantsite Disposal of the solid sanitary waste takes place at the currently operating RFP sanitary landfill

Hazardous and solid waste management at the RFP has been undergoing critical review and a significant number of operational and program changes since 1986 In July 1986, a Compliance Agreement pertaining to the applicability of hazardous waste regulations and the authority of the regulatory agencies was signed among CDH, EPA, and DOE In particular, the Compliance Agreement required the submittal of a RCRA Part B Permit Application for hazardous waste and hazardous waste that also contained low-level radioactive contamination (referred to as low-level mixed waste) In order to submit a Part B Permit Application, changes had to be made in RFP operations in order to comply with the minimum regulatory requirements These requirements help to ensure safety in the management of hazardous waste, and to prevent the inappropriate disposal of hazardous waste

The RCRA Part B Permit Application was submitted in November 1986, and has had major and minor updates a number of times since then This permit application was a multi-volume submittal and described in narrative form all hazardous waste management activities and other related activities In order to prepare this permit application, it was necessary to review all operations at the RFP and identify all those operations that involved, or had the potential to involve, the management of hazardous waste Generation, storage, treatment, movement, inspection and shipping operations for hazardous waste were described in detail Operations were reviewed and upgraded where necessary to meet RCRA Interim Status hazardous waste management requirements These upgrades were made prior to submittal of the RCRA Part B Permit Application At the time of permit application, the RFP was to be operating its hazardous waste management areas in full compliance with all interim status requirements These interim status requirements are spelled out in the hazardous waste regulations and help ensure adequate care in hazardous waste management Typical requirements of the RCRA regulations include the adequate design and maintenance of facilities that handle hazardous waste (such as providing secondary containment wherever hazardous waste liquids are stored or treated), frequent inspections of hazardous waste management facilities, appropriate training of personnel, provision of appropriate emergency equipment and communications systems, and documentation of various activities

Since 1986, additional types of materials have become subject to RCRA hazardous waste regulations These materials include transuranic mixed wastes and residue materials that are also mixed with hazardous constituents These other materials have either had RCRA Part B Permit Applications submitted for their management or the RCRA Part B Permit Application is under preparation Management activities for these materials are either in compliance with interim status requirements or are in the process of being upgraded to meet them As stated previously, the intent of these activities is to provide an adequate level of care in the management of hazardous waste These activities also help to prevent spills of hazardous wastes

The management of solid sanitary wastes was also impacted by the application of RCRA requirements to the RFP The July 31, 1986, Compliance Agreement included a requirement that the RFP conduct a Waste Stream Identification and Characterization Study to identify all waste streams generated at the RFP The study also evaluated whether these waste streams were, or had the potential to be, hazardous waste The study was used to identify hazardous waste streams that were not being managed in accordance with the RCRA regulations The management of these waste streams was then changed to comply with RCRA requirements in 1986 and 1987 A number of hazardous waste streams were identified as being disposed in the RFP sanitary landfill and were segregated out for management as a hazardous waste These activities helped to reduce the potential environmental impact of the RFP by providing for improved solid waste management activities Changes in operations at the RFP were made as soon as problems were identified, so by the time the Waste Stream Identification and Characterization Study was submitted to the agencies in April 1987, it was out of date for a number of waste management activities and programs An additional waste stream identification and characterization study was recently completed in support of the hazardous waste management activities This more recent study provided updated information on the 1987 study and included all waste and residues at RFP This study is, and will continue to be, updated on a periodic basis

The existing RFP sanitary landfill is approaching its maximum capacity and a new landfill is being sited on the RFP plant site The new landfill will be designed to meet the current EPA design requirements for sanitary landfills The landfill is designed to have a double-liner system with a bottom composite layer In this manner, the landfill will have two synthetic liners on top of a compacted clay liner All piping and storage tanks for management of leachate will be secondarily contained at the proposed sanitary landfill Also related to the operation of this new landfill will be a new, comprehensive solid waste management plan for the RFP The solid waste management plan will describe, evaluate, and provide for the upgrading, where appropriate, of all solid, sanitary waste management activities Waste generation, transport, and landfill operations will all be evaluated in this plan

8 3 FACILITY DRAINAGE

Drainage from secondary containment areas is controlled by manually activated valves Some secondary containment systems at the RFP are not provided with a drainage system and must have contained liquids (such as stormwater) manually pumped-out. The Implementation of the Control and Disposition of Incidental Waters Procedure determines the proper disposition of water drained from these areas Valves for secondary containment systems are closed following release of contents that had been held by the secondary containment system

Any major spill which occurs outside a building on plantsite, if not impounded in secondary containment, a building, a sump, or other control structure, would eventually enter the surface drainage ditches and be diverted to the surface water control Ponds A-1, A-2, B-1, or B-2 by valve control (except the spills in the southern areas of the 800 and 400 complexes which would flow to Pond C-2 via the South Interceptor Ditch) These ponds are designated and managed for spill control and water is not normally discharged from them Once contained, appropriate treatment for the spill waters would be identified and provided Spills not diverted to these control ponds would enter the pond bypass system and flow to surface water control Ponds A-3 or B-5 Figure 5 4 illustrates the surface water control structures in greater detail

8 4 STORAGE TANKS

Bulk storage tanks at the RFP are designed to be compatible with the intended contents under the intended conditions of service Materials incompatible with the tank system should be excluded from the tank system due to labeling of the tank and pipes for the proper material All new storage tanks containing regulated materials will

be constructed with a means for full secondary containment RFP Plant Standard SM-136 specifies that new secondary containment will be constructed of an impermeable material compatible with the contents of the tank An allowance for precipitation (25-year, 24-hour storm) is made in the secondary containment for those tanks located outside Required secondary containment for a series of tanks is designed to hold the total capacity of the largest tank and enough freeboard to allow for precipitation Continuous leak detection, which may include visual observation, is to be provided in all secondary containment for new tanks Disposal of materials removed from secondary containment is based upon the characteristics of the material Release to the environment is only allowed when the material is confirmed to pose no threat to the environment

Inspection of materials storage tanks is currently being conducted based on the requirements of a number of different sets of regulations An overall comprehensive Tank Management Plan addressing all tanks at the RFP is being developed as required by the Chromic Acid Incident Plan of the FFCA and will be implemented as funding becomes available This Tank Management Plan will provide for visual inspection of all tanks and non-destructive testing of all metal tanks on a regular basis, and is currently expected to be administered out of the Plant Engineering Department Results of all inspections currently conducted are maintained by the Operations Manager responsible for the tank Results of all inspections implemented for the Tank Management Plan will be maintained on a master database under the control of the department with responsibility for administering the Tank Management Plan A more detailed discussion of the Tank Management Plan being implemented can be found in Section 7 of this Plan

Secondary containment for most existing indoor tanks is provided by the building Radiological process areas have berms around the perimeter of the radiological process areas and door thresholds are raised to contain contamination in the area The depth of the containment is dictated by Criticality Engineering In addition, some indoor tanks have secondary containment berms to minimize the spread of liquid Liquid spilled from a tank or ancillary equipment inside a building is transferred to the process waste system, usually through the process waste drains, and treated

More detailed information on tank management is given below by tank category

Non-Regulated Chemical and Petroleum Storage Tanks

Each aboveground chemical and petroleum storage tank that will be operated will eventually be provided with secondary containment. The majority of these tanks already have secondary containment Aboveground tanks that will be operated without secondary containment are considered high risk areas

Implementation of the comprehensive Tank Management Plan will provide visual inspection of tanks under the supervision of a certified weld inspector and nondestructive thickness testing of metal tanks A Tank Overfill Prevention Team identified both physical and administrative spill control deficiencies Appropriate administrative changes have been made based on the Team's findings, and physical controls are pending subject to funding (EG&G, 1992c)

RFP Plant Standard SM-137 (EG&G, 1991d) recommends that all metal nonhazardous and nonradioactive tanks will be ultrasonic thickness tested every five years Data from these tests will be used to determine the corrosion rate and the expected remaining life of the tank

RFP Plant Standard SM-137 (EG&G, 1991d) recommends that all metal hazardous or radioactive substance tanks (excluding underground storage tanks and hazardous waste storage tanks, discussed below) will be ultrasonically thickness-tested annually

Underground Storage Tanks

Most underground storage tanks (USTs) at RFP are single-walled petroleum tanks All USTs regulated by RCRA Subtitle I and the CDH underground storage tank regulations have undergone annual tightness testing SM-137 (EG&G, 1991d) requires existing USTs without interstitial leak monitoring to be tightness tested annually This requirement is no longer applicable to the RFP because all RFP's USTs now meet leak-detection requirements or fall under the deferral until 1998 In place of a tightness-testing program, a vapor monitoring system is proposed as a BMP until all USTs are replaced or upgraded to meet the 1998 performance standards

Eighteen of the regulated tanks are diesel fuel tanks for emergency generators and are thus deferred from requiring release detection equipment The remaining are scheduled for upgrades including release detection, spill prevention, and corrosion protection In the long term, all USTs will be upgraded or replaced as necessary to meet the RCRA performance standards At the current time, it is believed that no leakage is occurring from underground petroleum tanks or related piping

SM-136 (Rockwell International, 1989) requires that all new USTs, or USTs undergoing a "major repair" be designed with special attention to corrosion protection All steel USTs must be provided with cathodic protection devices unless site conditions preclude failure by corrosion during the lifetime of the tank USTs may also be constructed of fiberglass-reinforced plastic or steel-fiberglass-reinforced plastic if the proper design standards are followed USTs will not be constructed of concrete Spill and overflow equipment will also be supplied for all appropriate USTs

Hazardous Waste Storage Tanks

All hazardous waste storage tanks comply with RCRA interim status regulations including requirements for secondary containment All such tanks were assessed and integrity was certified in 1989, except for the mixed residue tanks which were only recently declared waste tanks Hazardous waste tank assessments that include ultrasonic thickness testing are now performed annually The annual assessments are also performed for 90-day tanks (EG&G, 1992c) All newly identified RCRA tanks have been assessed and certified

Mobile and Portable Tanks

Mobile and portable tanks and other equipment containing or managing regulated substances are occasionally used at RFP for various purposes The use of such tanks or equipment will be evaluated under BMPs for the potential to cause a release to the environment. The following are acceptance criteria/operational standards for these tanks

- use of portable tanks except for surface water collection is not permitted by the On-Site Transporation Committee at RFP,
- no hazardous materials are allowed in portable tanks,
- tank wagons, as defined by DOT and meeting the specifications shown in 49 CFR 178, are permitted to be used by Plant Services onsite with the permission of the On-Site Transportation Committee,
- new tanks designed to be transported but which are not permanently attached to vehicles or mobile equipment (e g , portable tanks which are stationary while in use) are subject to the requirements

of SM-136 (Rockwell International, 1989) if they meet the criteria of containing an RQ of regulated substance or are permitted under RCRA,

- the tank and related equipment will be provided with full secondary containment to the extent practical if the tank has the potential to cause an immediate release to surface water (for instance, fuel supply tanks adjacent to ponds),

- the tank and related equipment will be provided with full secondary containment if the tank is to contain hazardous waste or radioactively contaminated materials, and

- containment (such as drip pans) will be provided to the extent practical for all other instances

The above criteria do not apply to vehicles and other mobile equipment (such as drill rigs), although BMPs should be considered prior to the use of such equipment in order to prevent or minimize releases to the environment.

8 5 TRANSFER, PUMPING, AND IN-PLANT PROCESS OPERATIONS

Design standards for piping at the Rocky Flats Plant is specified in Plant Standard SP-211 (EG&G, 1991a) as well as SM-136 These standards call for adequate protection of process piping through the use of appropriate materials of construction, the provision of secondary containment, or by protection of the pipe with appropriate protective materials or cathodic protection, depending upon the installation Pipelines that are part of a tank system are routinely inspected as an aspect of tank inspections

Pipelines not in service or on standby for an extended period of time should be capped or blank-flanged at the termination point After the pipe is capped, it will also be marked as to its origin Pipe supports should be designed to avoid or minimize abrasion and allow for thermal expansion or contraction

8 6 FACILITY LOADING AND UNLOADING AREAS

All tank car or tank truck loading and unloading should comply with the provisions established by CDH, EPA, OSHA, and DOT

SM-136, "Standard for Tanks Containing Regulated Substances" (Rockwell International, 1989), requires that bulk storage tanks (new tanks or those that undergo a major repair) loaded by transport vehicles have loading stations Underground petroleum storage tanks are exempted from this requirement The loading stations provide secondary containment for the entire contents of the delivery vehicle as well as dry disconnect couplings or similar means to prevent spillage during uncoupling All valves at loading stations will be equipped with locks to preclude operation by unauthorized personnel

Loading and unloading is also guided by On-Site Transportation Committee requirements These requirements are found in the "On-site Transportation Manual" (EG&G, 1991f), which was developed in accordance with the DOT regulations (49 CFR), EPA (40 CFR), OSHA (29 CFR), NFR (10 CFR), other Federal Agency regulations, DOE Orders, CDH, state and local regulations, and RFP requirements All procedures for loading and unloading of hazardous materials are in compliance with the requirements defined in 49 CFR 177 Subpart B

8 7 INSPECTIONS AND RECORDS

All inspections of RFP tanks and other facilities follow written procedures At the current time these procedures are specifically written to address various tank regulations In the future, additional inspections will be conducted in accordance with the comprehensive Tank Management Plan. The written procedures and a record of the inspections, signed by the appropriate supervisor or inspector, are currently kept on file for three years When implementation of the comprehensive Tank Management Plan begins, the department with responsibility for administering the Tank Management Plan will maintain a record of inspections Additional information on inspections and records can be found in Section 13

8 8 SECURITY

The entire RFP is fenced and patrolled by a 24-hour armed security force Entrance gates are guarded at all times so that intrusion by unauthorized personnel onto plant site should not occur The Controlled Area of the RFP is provided with adequate lighting such that identification of unplanned releases can occur at night Valves at loading stations are provided with locks to preclude operation by unauthorized personnel Additional information on security at the RFP can be found in Section 16 of this plan

8 9 PERSONNEL TRAINING

Personnel at the RFP are trained to a level commensurate with their job requirements and the level of complexity of the RFP All employees are trained in the identification of unusual conditions and the reporting of these incidents Additional information on training at the RFP can be found in Section 16 of this plan

8 10 SPCC/BMP REFERENCE TABLE

This table identifies documents and programs that include BMPs, spill prevention, and spill control practices Also identified are documents or studies that are information sources for BMPs, spill prevention, and spill control practices These documents and studies do not alone constitute BMPs, spill prevention, or spill control practices, but they are a source of information for these practices The type of document or program is identified in the table with regard to whether it is a BMP, spill prevention (SP), spill control (SC), or information document or program This table also includes the section of the document pertinent to the issue discussed in this SPCC/BMP Plan section

SECTION 8 0 SPILL PREVENTION CONTROL AND COUNTERMEASURES			
SPCC/BMP Documents	Document Type	Page	Section
NPDES Drain Verification Activity (EG&G, 1990a)	BMP/SP & SC	NA	NA
Draft Procedure for Drain Identification Study (In Preparation)	BMP/SP & SC	1	1 0
SWD Implementation of the Control and Disposition of Incidental Waters (EG&G, 1991a)	SC	1/5	2 0/6 4
Federal Facilities Compliance Agreement, Chromic Acid Incident Plan (EG&G, 1992c)	BMP/SP & SC	-	1 0/4 0

SECTION 8 0 SPILL PREVENTION CONTROL AND COUNTERMEASURES			
SPCC/BMP Documents	Document Type	Page	Section
Medical Radionuclide Procedure Follow-up (EG&G, 1991c)	BMP	1	3 3
Standard for Inspection of Tanks, Pressure Vessels, and Pressure Relief Valves, SM-137 (EG&G, 1991d)	BMP/SP	9	6 2
Standard for Fabrication of Piping Systems, SP-211 (EG&G, 1991a)	BMP/SP &SC	-	5/6/7
Tank Standard for Tanks Containing Regulated Substances, SM-136 (Rockwell International, 1989)	BMP/SP & SC	-	8/9/10/ 11/12
On-Site Transportation Manual (EG&G, 1991f)	Information	22	8 0

8 11 REFERENCES

EG&G, 1990a, NPDES Drain Verification Activity, Plutonium Operations Phased Resumption, July

EG&G, 1991a, Rocky Flats Plant Standard Number SP-211, Standard for Fabrication of Piping Systems, April 17

EG&G, 1991b, SWD Operating Procedures Manual, SWD Implementation of the Control and Disposition of Incidental Waters, Draft A, May

EG&G, 1991c, Health and Safety Practices Manual, Section 4 06, Medical Radionuclide Procedure Follow-Up, July 1

EG&G, 1991d, Rocky Flats Plant Standard Number SM-137, Standard for Inspection of Tanks or Piping Systems, Pressure Vessels, and Safety/Relief Devices, September

EG&G, 1991e, Hazardous/Toxic Material Release into the Sanitary Sewage System, Wastewater Treatment Plant Operational Order No 3, November 13

EG&G, 1991f, Rocky Flats Plant Onsite Transportation Manual, Traffic Department, January

EG&G, 1992, NPDES-Federal Facility Compliance Agreement Chromic Acid Incident Plan, August 10

Rockwell International, 1989, Rocky Flats Plant Standard Number SM-136, Standard for Tanks Containing Regulated Substances, March

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert E. Fiehweg 9/25/92
SWD Regulatory Programs Manager Date

9 0 SPILL REPORTING AND RESPONSE

9 1 GENERAL STATEMENT

Occurrences at RFP are of importance due to the nature of the operations and materials handled A number of response plans and procedures have been developed which document, to the extent possible, actions that will likely be taken in response to an occurrence, as well as arrangements for cooperative aid The most pertinent of these documents are the "Rocky Flats Plant Emergency Plan" (EG&G, 1992a), "Occurrence Reporting Process" 1-10000-ADM 16 01 (EG&G, 1991b), "RCRA Contingency Plan" (EG&G, 1991c) and the "Rocky Flats Fire Department Hazardous Materials Team Standard Operating Procedures" (EG&G, 1990) The discussion presented in this section of this SPCC/BMP Plan is a general description of the spill reporting and response activities at the RFP In the case of a spill, the documents referenced should be used rather than this Plan

An occurrence reporting system has been established at RFP that identifies the processes and responsibilities for reporting all occurrences at RFP It also serves to document occurrences for the purpose of minimizing recurrence and complying with legal requirements This system includes, but is not limited to, environmental incidents The "Occurrence Reporting Process" details occurrence categorization, notification, and reporting and is the parent document to several procedures and process descriptions which are updated as necessary Figure 9 1 demonstrates the decision path for occurrence categorization, notification, and reporting for environmental occurrences Figure 9 2 identifies offsite notification responsibilities

9 2 OCCURRENCE NOTIFICATION AND REPORTING

RFP personnel have been trained and instructed to report all releases greater than or equal to one pound of solids or one pint of liquids Upon discovery of a release of materials or other non-life-threatening emergency situations, involved RFP personnel immediately notify their supervisor The supervisor evaluates the situation and notifies the Operations Manager and Shift Superintendent if the spill is equal to or greater than one pint of liquid or one pound of solids If the supervisor is not available, the employee notifies the Operations Manager, the Shift Superintendent, or the Occurrence Notification Center (ONC), in that order If the situation is immediately life-threatening, the employee evacuates the area and calls extension 2911 for emergency assistance All calls to 2911 ring through to the Shift Superintendent's office

After the OM and Shift Superintendent have been notified, the occurrence is categorized, as described below The OM, or Shift Superintendent, notifies the ONC as to the category of the occurrence and gives approval for notifications to begin Waste Programs staff members provide technical assistance, as required, in determining which regulatory agencies must be notified The ONC staff will complete the Occurrence Notification Report Form and begin verbal notifications and written notifications as detailed in the "Occurrence Notification Process" (EG&G, 1992c) The categories are Emergency, Unusual Occurrence, and Off-Normal Occurrence, and the notification requirements differ for each (see Section 9 3) Verbal notification of employees in areas potentially affected by a release of materials would be made by a Public Address system that is operative throughout the Controlled Area of the RFP In addition to this warning system, there is also a fire alarm system operative throughout the RFP A number of other alarms are present in buildings that handle radionuclides, however, these alarms are typically specific to certain types of events involving radionuclides Notification of an event is the

responsibility of the ONC and the ONC maintains a list of notification contacts with names and phone numbers A list of offsite (non-RFP) notification contacts that are made by the ONC is given below

ONC Notification Contacts
DOE Headquarters
DOE Toxic Material Hotline
Jefferson County Communications Center
Boulder County Communications Center
State Oil and Gas Inspector
CDH Emergency Response Center
CDH RFP Program Unit
Arvada Communications Center
EPA National Response Center
EPA Operations Center
EPA Region 8, 24-Hour Emergency Spill
FEMA (Denver Region)
FBI (Security Related)
Colorado State Patrol
Denver Emergency Preparedness
City of Arvada
CHEMTREC
Civil Air Patrol (Lowry AFB)

Depending on the occurrence category some or all of the listed contacts may be notified ONC procedures and guides provide guidance and worksheets for determining when to contact which offsite agencies These procedures are in addition to the notifications made to DOE by the ONC Accurate and up-to-date phone numbers are maintained in the "Standard Occurrence Notification Guide" which is used by the ONC personnel.

The Operations Manager is responsible for ensuring that all reports are transmitted to the DOE within the time requirements A preliminary 10-day report is required Update reports are not required, but should be submitted when significant new information becomes available The Final Report is mandatory, must be completed as per the requirements of the Occurrence Reporting Process (EG&G, 1991b) and must be approved by the DOE Program Manager

The Operations Manager will conduct a critique meeting as soon as practical following stabilization of the situation, usually within two hours of discovery of the occurrence and prior to transmittal of the 24-hour DOE Notification Report. The results of the meeting are documented and maintained in the history file and should be factored into notifications and 10-day reports The SWD will participate in these activities on an as-needed basis determined by the occurrence root causes, corrective action and lessons learned DOE Order 5484 1 requires additional levels of investigation for certain occurrences

Occurrences are tracked by a system that is maintained by the Commitments Management Manager Tracking is initiated by the 24-hour DOE Notification Report and is terminated by the DOE Program Manager's approval of the Final Report once corrective actions are completed

9 3 OCCURRENCE CATEGORIZATION

The Operations Manager/Facility Manager is responsible for determining the nature of the occurrence and the initial categorization in accordance with the "Occurrence Categorization" (EG&G, 1992b), and notification to the ONC The Operations Manager is also responsible for authorizing the ONC to initiate notifications in accordance with the "Occurrence Notification Process" (EG&G, 1992c) The Operations Manager will continuously review the event conditions and upgrade or downgrade categorization as necessary until the Emergency Operations Center (EOC) has been activated (for emergency categorization only), the Shift Superintendent has taken responsibility, or the occurrence has ended In the absence of the Operations Manager, the Shift Superintendent will assume these responsibilities

The notifications procedures (Section 9 2) require that the State of Colorado and DOE be verbally notified of unusual occurrences within 2 hours and emergencies within 15 minutes If RFP notifies the state, but does not categorize an emergency within the required time frame, then the State of Colorado may default to an automatic General Emergency category

The responsibilities of the ONC officers are to request occurrence categorization from the Operations Manager and to make notifications as outlined in the "Occurrence Notification Process" (EG&G, 1992c) If information on an occurrence is received from other personnel, the ONC officer will notify the Shift Superintendent and the appropriate Operations Manager, ask them to categorize the occurrence and then make the notifications If the EOC has been activated, the ONC officer will provide the Chief of Staff with categorization information

The procedures, occurrence categorization matrices, and the needed forms are outlined in greater detail in "Occurrence Categorization" (EG&G, 1991b) Descriptions of occurrence categories are provided in that document and summarized below

Emergency - Any significant deviation from planned or expected behavior or course of events which could result in significant off-site consequences to people, property, the environment, or national security Some of the different categories of emergencies are described below

General Emergency - An event in progress or having occurred that involves actual or imminent catastrophic failure of facility safety systems, in which off-site releases of radioactive or toxic materials can reasonably be expected to exceed the protective action guidelines

Site Area Emergency - An event in progress or having occurred that involves actual or likely major failures of facility functions that are needed for the protection of on-site personnel, the public health and safety, and the environment, and in which off-site releases of radioactive or toxic material not exceeding the protective actions guidelines can reasonably be expected

Alert - An event in progress or having occurred that involves an actual or potential substantial reduction of the level of safety of the facility, from which limited off-site releases of radioactive or toxic materials may occur, but the releases are not expected to exceed protective action guidelines

Unusual Occurrences - A non-emergency occurrence having programmatic significance such that it adversely affects or potentially affects safety, environment, health, security, or operations

Off-normal Occurrence - A non-emergency occurrence that adversely affects, potentially affects, or is indicative of degradation in the safety, security, environmental protection performance or operation of the

facility Occurrences in this category which may be sensitive to the public or deemed "newsworthy" shall be elevated to the Unusual Occurrence category for notification purposes

Internally Reportable Occurrence - Any non-planned event or condition having adverse consequences not classified as an emergency, unusual occurrence, or off-normal occurrence

The Rocky Flats Emergency Plan (RFEP) may be implemented in response to a variety of occurrences In addition to the requirements stated in the RFEP, the Shift Superintendent is charged with the responsibility of determining if an occurrence meets the criteria for implementation of the RCRA Contingency Plan based on consultation with specialists on plantsite in making this determination The RCRA Contingency Plan is implemented when an occurrence

(1) involving hazardous waste results in an injury requiring more than first-aid,

(2) involving a spill, leak, or other release of a hazardous waste to the air, soil, or surface water (outside a building) if the release is greater than one pint or one pound,

(3) involving a spill, leak, or other release of hazardous waste inside a building results in

- a release which exceeds a reportable quantity equivalent volume as defined in 40 CFR Part 302, or
- or a spilled material from a hazardous waste tank system not removed from secondary containment within 24 hours, or

(4) a fire and/or explosion in which a hazardous waste release or an active hazardous waste management unit is involved

The RCRA Contingency Plan can also be implemented as the result of a hazardous waste incident resulting in an injury requiring more than first aid If the RCRA Contingency Plan is implemented, additional reporting and notification are required These notifications and reports are the responsibility of the Waste Programs Department These requirements are outlined in the "RCRA Contingency Plan" (EG&G, 1991c)

9 4 INCIDENT RESPONSE

The Rocky Flats Plant Emergency Plan details RFP emergency response organizations, structure, and functions The EOC Control Room is staffed 24 hours a day by the Shift Superintendent and the Occurrence Notification Center (ONC) staff Under normal operating conditions, the EOC is in a stand-by status When an occurrence is categorized as an emergency, or the occurrence actually or potentially poses a significant and immediate threat, the Shift Superintendent has the responsibility to activate the EOC The EOC then becomes the focal point for emergency response communications and notifications Several other groups and organizations not mentioned in this discussion are part of, or related to, the EOC They provide emergency response support and consultation to the EOC and are listed in the RFEP

The Hazardous Materials Response Team (Haz-Mat Team) was established to respond to hazardous material occurrences at the RFP This team is the immediate respondent to any environmental incident causing the release of radioactive, toxic, or hazardous materials This team is composed of Fire Department employees thoroughly trained in emergency response Support staff and groups to the Haz-Mat Team typically include

- Health Physics on-duty Site Survey,
- Health Physics Foreman,
- Safety and Hygiene,
- Surface Water Division,
- Hazardous Materials Control,
- Health & Safety (H&S) Area Engineer,
- Utilities on-duty,
- Garage Heavy Equipment and Trucking,
- Chemical Operations on-duty Manager;
- Security,
- Meteorology,
- Traffic,
- Waste Management,
- Medical, and
- Permitting and Compliance (Waste Programs)

Upon notification of an incident, the Shift Superintendent notifies the Haz-Mat Team, which responds to the scene and initiates appropriate mitigation efforts Support members of the Haz-Mat Team will be activated as necessary for the particular emergency being addressed These mitigation efforts and other actions of the Haz-Mat Team are detailed in the Haz-Mat SOPs (EG&G, 1990)

The Emergency Control Station (ECS) is a location that can be used as a command post during Haz-Mat incidents The ECS is positioned in a safe and strategic location, and the Haz-Mat Team Leader and Shift Superintendent operate from this command post The Emergency Control Station is equipped with resources such as radios with multiple channels, reference books, maps, and reports In addition, the Haz-Mat Team operates the Haz-Mat Van, a vehicle equipped with special supplies that may be needed to respond to a hazardous materials event A complete inventory of the Haz-Mat Van is available from the RFP Fire Department and the most recent van inventory is presented in Appendix 5

The Haz-Mat Team Leader is the sole person responsible for the entire operation of the Haz-Mat Team The Team Leader is typically a Senior Fire Officer and is subordinate only to the Fireground Commander or Shift Superintendent The Haz-Mat Team Leader will operate in cooperation with the Shift Superintendent or Fireground Commander as follows

1) The first-arriving Fire Department Officer will be designated as initial Haz-Mat Team Leader Depending on the type and level of the incident, the Haz-Mat Team Leader function will be delegated to the Team Member with the most relevant training and experience The Fireground Commander has the authority to select the best qualified Team Leader

2) The Haz-Mat Team Leader will assure that all aspects of the operation are addressed and that actions are taken to mitigate the incident safely The Team Leader's responsibilities include, but are not limited to·

   - establishing and directing the Haz-Mat Team command post,
   - determining safe and restricted areas, including the "Yellow Zone" into which only emergency personnel will be admitted and the "Red Zone" into which only Haz-Mat Team members will be admitted,
   - calling upon the Security Department to maintain the zone areas as needed,
   - using accepted tactical methods to contain and control the incident,

- assuring efforts are made to assist in the remediation of the site,
- assuring continual monitoring of the situation to detect any change in spill run-off or vapor cloud movement, travel, and amount,
- ordering of additional evacuation or other measures as needed to respond to such changes,
- advising Fire Communications to notify appropriate secondary response personnel for assistance if the quantity of materials involved in the occurrence is significant enough,
- requesting that the Security Department make Public Address announcements and assist in evacuation if the Haz-Mat Team Leader and Shift Superintendent determine it is necessary,
- communicating directly with Safety and Hygiene or CHEM-TREK when specific material properties and methods of material handling are not absolutely certain,
- ensuring that the scene of the incident is safe prior to releasing the area to anyone other than Fire Department personnel,
- providing formal documentation of the incident encompassing all reports and notifications required to meet statutory requirements, and
- assuring minimum staffing levels are maintained for safe and effective operations

3) If further assistance is needed to mitigate a Haz-Mat incident, mutual aid from the Jefferson County Hazardous Substance Response Authority or the Boulder County Haz-Mat Team is available Activation of any off-site mutual aid assistance shall be authorized by the Shift Superintendent or Crisis Management Team if the Emergency Operations Center is activated

In the event that the Haz-Mat Team effort to contain a spill is unsuccessful and it appears the spill may migrate to the plant drainages, or if a spill is of such magnitude that the Haz-Mat Team cannot contain the spill, then appropriate spill diversion procedures as prepared by SWD will be implemented to contain the pollutants in the spill control ponds As mentioned previously, some of the A-, B-, and C-series ponds may serve as spill control or spill isolation ponds if no other alternative is available An SWD spill diversion procedure describes operation of the gates and valves necessary to control runoff, floods, and spills originating both west of RFP and on Plantsite In general, uncontrolled releases occurring in the 700 complex area will be diverted to Ponds A-1 or A-2 Releases in part of the 400 complex, part of the 800 complex, the 900 complex, and the central area of the plant will be diverted to Pond B-1 or B-2 Releases occurring in the remainder of the 400 and 800 complexes will be diverted to Pond C-2 via the South Interceptor Ditch A release to the sanitary waste system will be directed to Ponds B-1 and B-2, if there is sufficient capacity, or to Pond B-3 if there is not capacity Spills which cannot be contained in the spill control ponds designated for the area in which the spill occurred will be pumped to other spill control ponds or into containment vessels such as drums or portable tanks when possible and practical

If a large spill were to occur west of the West Interceptor Ditch and the Haz-Mat Team could not contain it, then it is possible that the spilled material could enter the West Interceptor Ditch If this were to happen, the flow could travel through the West Interceptor Ditch to McKay Bypass, Walnut Creek and off the RFP There is little risk of such an occurrence happening because all production buildings, process waste system components, and major tanks are east of the West Interceptor Trench The only credible scenario for a major spill to enter the West Interceptor Trench involves a tanker truck leaking or spilling a large quantity of hazardous material close to the ditch Such a spill is very unlikely to occur

Once the incident has been controlled, clean-up and decontamination activities will begin If the spill involved surface water, the SWD will have oversight authority to ensure that adequate cleanup is conducted. Cleanup involves the collection and containment of released material including liquids, contaminated sorbent material, and contaminated soil Liquid releases will be pumped into drums and analyzed to determine appropriate action.

Contaminated sorbent material will be contained in DOT-approved containers Soil determined to be contaminated will be removed and contained The remaining soil in the area will be identified as a potential area of concern (possible IHSS) in the Historical Release Report (HRR) If EPA or CDH decides the area qualifies as an IHSS, it will be added to the list of IHSSs, and sampled and investigated as a part of the Environmental Management (EM) Department activities at RFP In general, the EM policies call for removal of contaminated soils until the contaminant concentrations in remaining soils do not pose an unacceptable risk to human health and the environment In the unlikely event that a spill impacts groundwater, remediation will be implemented as necessary as part of the EM Programs activities at the RFP Responsibility for spill cleanup rests with the generator of the spill, unless the site is declared an IHSS If the site is declared an IHSS, the responsibility for cleanup will then rest with EM Should a spill occur in an already identified IHSS, all released materials that could spread in an uncontrolled manner will be removed or remediated (as per discussions with CDH or EPA) The remainder of any released materials will be remediated following schedules for the IHSSs presented in the IAG

9 5 DISPOSITION OF SPILL WATERS

As discussed above, the spill control ponds could be used in an emergency to contain large spills or spills that migrate through the WWTP if other alternatives are not available Should any of these ponds be used to contain a spill, treatment of the water in the ponds may be necessary The possible options for treatment of that water on-site include spray evaporation of the water at Pond A-2, transfer of the water to Building 374 for precipitation of contaminants and/or evaporation, transfer of the water to the Pond A-4 treatment system which consists of treatment by filtration and GAC, transfer of the water to the GAC treatment system proposed for construction in the Tank 231 area, or treatment of the water through the WWTP Should one of these types of treatment be technically appropriate, approval from the cognizant regulatory agencies will be sought prior to transfer and treatment of the water As control systems at RFP are modified and upgraded, additional treatment capability and flexibility may be available (such as the evaporators being built for the Solar Evaporation Pond clean-out) In the event that none of the available on-site treatment systems is suitable for the material to be treated, purchase or lease of a more suitable treatment system or a contract with an outside firm to treat the waters will be pursued

9 6 DISPOSITION OF INCIDENTAL WATERS

Many activities at RFP may result in the generation of incidental waters requiring on-site treatment or other management. This water may originate as surface water, groundwater, utility water, process water, or wastewater from

- construction activities that require excavation below the groundwater table and subsequent groundwater pumping,
- natural collection and subsequent pumping of precipitation and stormwater runoff in excavations, pits, trenches, ditches, or depressions that do not intercept the groundwater table,
- collection of water in secondary containments, process waste valve vaults, electrical vaults, sumps or manholes that require pumping, and
- discharge of water from the fire water suppression system

Water originating from these sources is controlled, contained, sampled, analyzed and treated or discharged according to the procedures developed by SWD and described in the " SWD Implementation of the Control and Disposition of Incidental Waters" (EG&G, 1991a) This procedure establishes guidance for planning, sampling, and management of incidental water generated at any RFP location The procedure identifies acceptable limits for gross alpha, gross beta, pH, and nitrates If the incidental water meets these criteria, the water is discharged to the stormwater system However, if the established criteria are exceeded, the incidental water is collected and

treated in the process waste treatment facility (Building 374) Additionally, if the source of water is an area of known or suspected contamination, additional analyses will be performed for the specific known or likely water quality parameters Results of the analyses will be used to determine the appropriate disposition of the water

9 7 SPCC/BMP REFERENCE TABLE

This table identifies documents and programs that include BMPs, spill prevention, and spill control practices Also identified are documents or studies that are information sources for BMPs, spill prevention, and spill control practices These documents and studies do not alone constitute BMPs, spill prevention, or spill control practices, but they are a source of information for these practices The type of document or program is identified in the table with regard to whether it is a BMP, spill prevention (SP), spill control (SC), or information document or program This table also includes the section of the document pertinent to the issue discussed in this SPCC/BMP Plan section

SECTION 9 0 SPILL REPORTING AND RESPONSE			
SPCC/BMP Documents	Document Type	Page	Section
Rocky Flats Plant Emergency Plan (EG&G, 1992a)	Reporting/ Response & SC	-	Document
Occurrence Reporting Process (EG&G, 1991b)	Reporting/ Response	-	Document
RCRA Contingency Plan (EG&G, 1991c)	Reporting/ Response & SC	-	Document
Rocky Flats Fire Department Hazardous Materials Standard Operating Procedures (EG&G, 1990)	Response & SC	-	Document
Occurrence Notification Process (EG&G, 1992c)	Reporting/ Response	-	7
Occurrence Categorization (EG&G, 1992b)	Reporting/ Response	-	4
SWD Implementation of the Control and Disposition of Incidental Waters (EG&G, 1991a)	SC	-	7

9 8 REFERENCES

EG&G, 1990, "Rocky Flats Fire Department Hazardous Materials Team Standard Operating Procedures," As Amended, December 5

EG&G, 1991a, SWD Operating Procedures Manual, SWD Implementation of the Control and Disposition of Incidental Waters, Draft A, May

EG&G, 1991b, Occurrence Reporting Process, Plant Administrative Manual, Nuclear Safety Related, Procedure 1-10000-ADM-16 01, Revision 2, As Amended, September

EG&G, 1991c, RCRA Contingency Plan, EG&G Rocky Flats Plant, October 24

EG&G, 1991d, Rocky Flats Plant Environmental Protection Implementation Plan, November 9, 1991 to November 9, 1992, December 20

EG&G, 1992a, "Rocky Flats Plant Emergency Plan," Report No 1-15200-EP-01 00 Emergency Preparedness Department, January 31

EG&G, 1992b, "Occurrence Categorization," Revision 0, 1-15200-ADM-16 02, June

EG&G, 1992c, "Occurrence Notification Process," Revision 0, 4-15230-EPIP-04 02, June 1

EG&G ROCKY FLATS
SPILL PREVENTION CONTROL COUNTERMEASURES
BEST MANAGEMENT PRACTICES PLAN

CATEGORY 1

Manual 21000-SPCC/BMP
Chapter No 10 0
Page 1 of 9
Effective Date September 1992
Organization ENVIRONMENTAL MANAGEMENT

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert E. Fuhrer 9/17/92

SWD Regulatory Programs Manager Date

10 0 MATERIAL INVENTORY SYSTEM

10 1 INTRODUCTION

The RFP has initiated a Chemical Control System (CCS) to provide administrative support to groups that ensure personnel will not be exposed to significant risk of harm from chemicals and to minimize the environmental impact due to the presence of hazardous chemicals at RFP CCS procedures are presently being written and should be referenced for greater detail Specific objectives of the RFP that support these overall goals are as follows

- Employee exposures to chemicals posing health hazards will be kept within the limits specified in applicable governmental regulations and nationally recognized standards All such exposures will be managed in accordance with As Low As Reasonably Achievable (ALARA) principles

- Releases of hazardous chemicals to the environment will be kept within the limits prescribed by applicable governmental regulations

- The nature of the hazardous materials used at RFP and the need for their use will be continuously assessed The attendant hazards will be promptly communicated to the appropriate personnel

The definition of a hazardous material is any substance or material, including a hazardous substance, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported, and which is designated as such in 49 CFR 172 101, or the appendix to 49 CFR 172 101, defined as a Hazardous Waste by the U S Environmental Protection Agency specified in 40 CFR 261 There are a number of materials used at RFP that are hazardous under the definition Examples include acids, bases, solvents, beryllium, and radioactive metals The comprehensive inventory of chemicals used at RFP is available from the CCS, a database maintained by Chemical Tracking and Control Systems that provides real-time chemical inventory information The general discussion presented in this section of the SPCC/BMP Plan is a general description of the material inventory system at the RFP. The documents referenced in this section, or the groups described in this section, should be used for up-to-date information on these subjects

10 2 RESPONSIBILITIES

The implementation and maintenance of the CCS is the responsibility of all RFP personnel that use hazardous chemicals Users provide the information stored and accessed via the internally developed CCS software Some of the groups with responsibilities for activities related to hazardous chemicals are listed below

- Chemical Tracking and Control Systems Group (CTCS)
  - documenting acquisition of hazardous chemicals
  - bar coding chemicals at RFP
  - tracking chemicals using the CCS while on plantsite
  - inputing inventory data into the CCS

- Safety and Hygiene
  - assisting operations in the safe use and handling of hazardous materials
  - ensuring Material Safety Data Sheets are on file for all non-waste hazardous chemicals at RFP
  - overseeing acquisition of hazardous chemicals
  - evaluating chemicals and their usage
  - maintaining the "Hazard Communications Program" HSP 9 07

- On-Site Transportation Committee
  - transporting hazardous chemicals

- Waste Operations
  - identifying procedures for treatment, storage, and disposal of hazardous and mixed chemical waste

- User
  - ensuring labels contain appropriate information
  - ensuring MSDS is available for non-waste hazardous chemicals at RFP

- Operations Manager
  - ensuring compliance with Hazard Communication program

10 3 HAZARD ASSESSMENT AND COMMUNICATION

A plantwide chemical inventory coordinated by CTCS is maintained on an Oracle database system to establish the identity and location of hazardous chemicals at RFP Inventory data typically include such items as the identity (name) of each chemical, the name of its manufacturer, the location (such as building and room numbers), quantity of the chemical, container storage information, and the National Fire Protection Associations Standard (NFPA) No 704 hazard ratings The information contained on the MSDS for the inventoried chemicals is also entered on the database

The Safety and Hygiene Group performs periodic building inspections which include review of compliance with the "Hazardous Communication (Haz-Com) Program", Health and Safety Practice (HSP) 9 07 (EG&G, 1992a) The four main points of compliance with Haz-Com that are stressed are (1) appropriate labeling of chemicals (if labels are not appropriate the owner is instructed to affix an NFPA 704 diamond), (2) required training has been given to employees working with chemicals, (3) MSDSs are available for all chemicals in the building, and (4) a copy of HSP 9 07 is available for review by all employees in the building More detail on labeling and MSDSs is given below

Every manufacturer or importer of a hazardous chemical is required by federal law to evaluate the hazards of that chemical and to transmit the hazard information, via the Material Safety Data Sheet (MSDS), to purchasers of the chemical If a hazardous chemical (other than a hazardous waste) is generated at RFP, the organization responsible for the generation of the chemical assists Safety and Hygiene (S&H) in performing an evaluation of the hazards of the chemical at the earliest possible time

The hazard rating system used at RFP is based on the National Fire Protection Association (NFPA) Standard No 704, "Standard System for the Identification of the Fire Hazards of Materials" (NFPA, 1985) This system shows the hazards of a chemical in four categories

- Health (blue)
- Flammability (red)
- Reactivity/Instability (yellow)
- Special hazard (white)

The purpose of the hazard rating, especially when used as a component of the labeling system described below, is to provide "a simple system of readily recognizable and easily understood markings, which will give at a glance a general idea of the inherent hazards of any material and the order of severity of these hazards (and) to provide an appropriate signal or alert and on-the-spot information " (NFPA, 1985) The following is a brief explanation of the NFPA No 704 rating system

Health Hazard (blue background)

4	Extreme hazard (deadly)
3	High hazard (major permanent or temporary injury)
2	Moderate hazard (minor permanent or temporary injury)
1	Slight hazard (minor injury readily reversible)
0	No significant hazard

Flammability (red background)

4	Burns readily at ambient conditions
3	Will ignite at most ambient conditions
2	Will ignite if moderately heated
1	Will ignite if preheated
0	Will not burn

Reactivity (yellow background)

4	May detonate spontaneously
3	Shock, heat, or water may detonate
2	Unstable, violent chemical change with/without water
1	Stable, but unstable if heated, water-reactive but not violent
0	Stable, not water-reactive

Special Hazard (white background)

OX or OXY	= Oxidizer
W	Use no water to extinguish
R	Radioactive
CA	Carcinogen

A hazard rating is required only for those hazardous chemicals (except wastes) which do not have an appropriate manufacturer's label on the container The manufacturer's label should include 1) name of chemical, 2) name and address of manufacturer, and 3) the appropriate hazard warning If S&H must rate the chemical, the hazard rating is based primarily on the information supplied on the MSDS If no MSDS is available, S&H obtains the required information from other sources S&H keeps a written protocol that outlines the criteria used in developing hazard ratings

10 4 LABELING

Every container at RFP is to be labeled with the name of the material it contains If the material is a hazardous chemical, the label also displays appropriate warnings of the hazards of the chemical The name of the chemical is placed either above or below the diamond label It may not, however, be placed in the white diamond which is reserved for special hazards The trade name shown on the diamond label is the same as the name on the manufacturer's label If the manufacturer's label and the CTCS bar code are on a hazardous chemical container, then no other labeling is required However, if S&H judges the manufacturer's label to be inadequate, then additional labeling may be required

S&H makes decisions on requests for exemption from this labeling standard An example of an exemption might be a series of beakers of chemicals undergoing laboratory analysis (HSP 9 11) (EG&G, 1990b). The only labels on the beakers are sample numbers which refer to a nearby logbook or other document that shows the names of the chemicals in the beakers and appropriate warnings of their hazards

All hazardous waste containers, including tanks, must also be properly labeled In general, only the yellow/red hazardous waste label applies to hazardous waste containers Similarly, every pipe at RFP is to be labeled with the name of the material contained in the pipe, as provided by RFP Standard SX-164 (EG&G, 1991d)

10 5 MATERIAL SAFETY DATA SHEETS

A master file of MSDSs obtained from the suppliers of the chemicals is maintained by S&H S&H also maintains and distributes MSDS work area files to each work area where hazardous chemicals are present. Each work area file consists of a list of the hazardous chemicals present in the area, and an MSDS for each chemical on the list Holders keep their manuals current by inserting updates as they are received from S&H The MSDS work area files correspond with the current chemical list as supplied by CTCS

The information on the MSDSs is also entered into the CCS database The master file and the database are kept as current as possible by replacing obsolete MSDSs with updated versions as they are received When a hazardous chemical is brought to RFP for the first time, S&H assures that an MSDS for the chemical is ordered from the manufacturer and kept in the central MSDS files A copy is also sent to the owner of the chemical on plantsite

As discussed, when a hazardous chemical (other than a hazardous waste) is generated, the organization responsible for its generation assists S&H in preparing an MSDS for the chemical based on the hazard evaluation Similarly, S&H develops MSDSs for any hazardous chemical for which no current supplier can be found to furnish MSDSs

10 6 ACQUISITION OF HAZARDOUS CHEMICALS

The acquisition of hazardous chemicals is in the process of being controlled in order to minimize quantities of hazardous materials purchased at RFP Hazardous chemicals can only be obtained with a Purchase Requisition (PR) or system contract catalog Material Requisition (MR) The Chemical Review Board will use the CCS database to review all chemical acquisitions All chemicals being requisitioned are subject to the approval of the Chemical Review Board

10 7 HANDLING, USE, AND STORAGE OF HAZARDOUS CHEMICALS

Employee exposures to chemicals posing health hazards are kept within the limits listed in applicable nationally recognized standards, particularly those prescribed in DOE Order 5480 4 "Environmental Protection, Safety, and

Health Protection Standard " Furthermore, exposures to those chemicals are kept ALARA, as provided by the Rocky Flats Policy Manual and HSP 1 02 (EG&G, 1991b) S&H monitors compliance with these standards and recommends corrective actions when needed S&H also conducts building inspections, process reviews, and review of engineering orders When S&H identifies that a hazard is being introduced for which adequate protective measures are not in place, S&H contacts the user(s) or designers regarding this hazard Appropriate protective measures are chosen for implementation during the ensuing discussions

Industrial & Systems Safety Engineering maintains surveillance of any chemicals posing physical hazards (e g , explosive chemicals and compressed gases) to evaluate the safety of their handling, use, and storage The Fire Department conducts periodic inspections for the presence of flammable and combustible chemicals In addition, when the Fire Department performs routine fire inspections, a hazardous material inspection is included Any improper storage or storage of incompatible materials is identified during the inspection After identifying a problem, the Fire Inspector orders immediate corrective action under the supervision of the Fire Department

Plans for operations involving new hazardous chemicals, new or modified operations, or for new or modified facilities are reviewed and approved by the H&S specialties involved in the project and by the Fire Department prior to implementation The requirements for these reviews are outlined in HSP 2 02 entitled "H&S Area Engineer/Area Safety Teams - Functions and Responsibilities" (EG&G, 1990a)

Proper procedures for routine handling of hazardous materials are communicated to employees through the Operational Safety Analysis (OSA) An OSA is prepared, reviewed, and approved for all operations as described in HSP Section 2 03 "Operational Safety Analysis" (EG&G, 1991c) An approved OSA can contain important spill prevention or BMP practices All employees involved in a covered operation are required to be instructed in the OSA procedures by their supervisor, and are required to read the OSA for that operation

Employees are informed of the hazards of non-routine tasks via a work permit and the associated prejob conference as provided in the Integrated Work Control Program (IWCP) For non-routine tasks not appropriate for the work permit procedures, the H&S Area Engineer may require the preparation of a Job Safety Analysis (JSA) under the authority of HSP Section 2 02 The JSA is similar to a brief and limited duration OSA For non-routine tasks involving only employees of a single organization for which neither the work permit nor the JSA procedure is applicable, the responsible supervisor informs affected employees of the chemical hazards of the task

Certain hazardous chemicals, or operations using them, are subject to special requirements governing their transportation, handling, storage, use, and/or disposal These requirements aid in the avoidance of spills and include

- HSP 9 02, "Storage and Disposal of Nonplutonium Metal Fines"
- HSP 9 07, "Hazard Communication Program"
- HSP 9 10, "Transfer of Hazardous Liquids"
- HSP 9 11, "Laboratory Chemical Hygiene Program"
- HSP 11 01, "Compressed Gas Cylinders"
- HSP 11 02, "Aerosol Spray Cans"
- HSP 13 02, "Control of Pesticides"
- HSP 13 03, "Carcinogen Control"
- HSP 31 12, "Transfer and Storage of Pyrophoric Metals Other Than Plutonium for Fire Safety"
- HSP 32 01, "Handling and Storage of Flammable and Combustible Liquids for Fire Safety"
- HSP 34 03, "Spray Painting Using Toxic, Flammable and Combustible Materials"
- Rocky Flats Plant Standard SX-235, "Standard for Safe Removal of Friable Asbestos Material "
- Transporation Manual

All the HSP documents can be found in the "Health & Safety Practices" manual Each HSP is reviewed every two years and revised as appropriate Plant Standards are available in the "Plant Standard Manual " Plant Standards are also reviewed and updated every two years Approval for revisions to existing standards is required from the Functional Manager of the group responsible for the standard

In addition to those already mentioned, a number of measures to protect personnel and facilities from chemical hazards are available and in use at RFP These include gloveboxes and other enclosures, local exhaust ventilation hoods, malfunction or upset sensors/alarms/controls, fire and overheat detectors/alarms/extinguishing equipment, safety showers and eye baths, respiratory protection equipment, eye and face protection devices, protective clothing, the confined space entry procedure, the welding permit procedure, and the IWCP Employees are monitored to assess their exposure to chemical hazards when appropriate

10 8 TRANSPORTATION OF HAZARDOUS CHEMICALS

The packaging for transfer or shipment, labeling for transfer or shipment, and transporting of hazardous chemicals to, from, and within RFP is controlled by three manuals issued by the Traffic Department (1) the "Transportation Manual" (EG&G, 1990c), (2) the "On-site Transportation Manual" (EG&G, 1991a), and (3) the "Labeling and Marking Procedures for Radioactive Materials Containers" (EG&G, 1991e) These manuals implement applicable DOE orders and other governmental regulations, notably those of the DOT, as found in 49 CFR As per DOE Transportation Orders, on-site movement of materials are transfers and off-site movements of materials are shipments

The Traffic Department is responsible for compliance with the DOT requirements and the requirements of the waste receivers In addition, Traffic also is responsible for DOT Hazardous Materials Transportation training of personnel, data review and preparation of the Bill of Lading and the Uniform Hazardous Waste Manifest, notification of disposal sites prior to shipment, certification that applicable requirements are met prior to off-site shipment, maintaining an auditable records system pertaining to shipments, and pre-loading and post-loading vehicle, trailer and load inspections

The specific responsibilities of the Traffic Manager include certifying that the Uniform Hazardous Waste Manifests are in compliance with RCRA and hazardous waste transportation requirements, that the waste container contents are adequately described, and that waste shipments are in proper condition for transportation The Traffic Manager also is responsible for preparation of the Bill of Lading, which certifies that the materials named are properly classified, described, marked and labeled, and are in proper condition for transportation in accordance with the DOT regulations

The On-Site Traffic Control Committee is responsible for performing functions and resolving issues as they pertain to packaging and transportation of radioactive material, hazardous material, hazardous substances, and hazardous waste on plant site

All employees involved in the transportation of hazardous chemicals receive specific training and certification for that activity, as required by the above-named manuals This includes the Hazardous Material Transportation training, as required in 49 CFR

10 9 TREATMENT AND DISPOSAL OF HAZARDOUS CHEMICALS

The treatment, storage and disposal of RFP hazardous wastes are controlled by the "Hazardous Waste Requirements Manual" (EG&G, 1992b), Waste Operations' "Waste Management Manual" and RFPM MAT 19-004 "Management of Nonradioactive Hazardous and Toxic Waste Materials " These documents implement regulations

and orders of EPA, CDH, DOE, and other agencies having jurisdiction at RFP Releases to the environment of hazardous chemicals must be kept within the limits established by CDH, EPA, and other governmental agencies having jurisdiction, as prescribed in DOE Order 5480 4 and other DOE Orders Environmental Management monitors compliance with these standards and recommends corrective actions when needed

All employees involved with hazardous waste management receive specific training for their particular activities

10 10 WASTE MINIMIZATION

RFP has a formally organized Waste Minimization Program with an overall goal of reducing the volume and toxicity of RFP waste streams The program is conducted to fulfill EPA and CDH requirements for waste minimization (40 CFR 262 41 and 6 CCR 1007-3, Part 262 41) as well as DOE Orders 5400 1, General Environmental Protection Program, and DOE Order 5820 2A, Radioactive Waste Management. The goals of the Waste Minimization Program include

- Establish and demonstrate senior management commitment to pollution prevention and waste minimization practices,
- Conduct process waste assessments to identify opportunities for waste minimization and needed research and development,
- Heighten employee awareness in pollution prevention and waste minimization through specific training, special campaigns, and incentive programs,
- Establish quality assurance measures for waste minimization activities,
- Establish a system to measure and report performance in waste minimization to EG&G management, DOE, and regulatory agencies,
- Maintain consistency with RFP policies for release of materials to the public, and expand current recycling programs to include other items determined to be economically feasible,
- Adapt and implement new and existing technologies as rapidly as possible to reduce the generation of waste and plutonium residues at the source,
- Promote a work ethic among RFP employees that encourages pollution prevention ideals and the preservation of natural resources, and
- Establish numerical reduction goals for RFP's waste generators (separate goals may be established for each waste category and apportioned among RFP's Operational Managers who will be responsible for reporting progress toward these goals to senior management)

Many waste minimization projects are underway and are described in greater detail in the "Waste Minimization Program Plan" (DOE, 1992) which should be referenced for additional details on waste minimization

10 11 SPCC/BMP REFERENCE TABLE

This table identifies documents and programs that include BMPs, spill prevention, and spill control practices Also identified are documents or studies that are information sources for BMPs, spill prevention, and spill control practices These documents and studies do not alone constitute BMPs, spill prevention, or spill control practices, but they are a source of information for these practices The type of document or program is identified in the table with regard to whether it is a BMP, spill prevention (SP), spill control (SC), or information document or program This table also includes the section of the document pertinent to the issue discussed in this SPCC/BMP Plan section

SECTION 10 0 MATERIAL INVENTORY SYSTEM			
SPCC/BMP Documents	Document Type	Page	Section
Hazard Communications Program, HSP 9 07 (EG&G, 1991a)	Req't, BMP/SP	-	4 1
Laboratory Chemical Hygiene Program, HSP 9 11 (EG&G, 1990b)	Req't, BMP/SP	3	4
Plant System and Component Identification and Labeling, Plant Standard SX-164 (EG&G, 1991d)	BMP/SP	-	Document
Program Document for ALARA, HSP 1 02 (EG&G, 1991b)	Req't, BMP	1	1
H&S Area Engineer/Area Safety Teams Functions and Responsibilities, HSP 2 02 (EG&G, 1990a)	Procedure	-	Document
Operational Safety Analysis, HSP 2 03 (EG&G, 1991c)	BMP/SP	-	Document
Transportation Manual (EG&G, 1990c)	BMP/SP	-	Document
On-Site Transportation Manual (EG&G 1991a)	BMP/SP	-	Document
Labeling and Marking Procedures for Radioactive Materials Containers (EG&G 1991e)	BMP/SP	-	Document
Hazardous Waste Requirements Manual (EG&G, 1992b)	Req't, BMP/SP	-	Document
Waste Minimization Program Plan (DOE, 1992)	BMP/SP	-	Document

10 12 REFERENCES

DOE, 1992, Waste Minimization Program Plan for the US DOE - Rocky Flats Plant, January 17

EG&G, 1990a, Health and Safety Practices Manual, HSP 2 02, H&S Area Engineer/Area Safety Teams Functions and Responsibilities, November 15

EG&G, 1990b, Health and Safety Practices Manual, HSP 9 11, Laboratory Chemical Hygiene Program, December 17

EG&G, 1990c, Transporation Manual, Traffic Department, As Amended

EG&G, 1991a, Rocky Flats Plant Onsite Transportation Manual, Traffic Department, As Amended, January

EG&G, 1991b, Health and Safety Practices Manual, HSP 1 02, Program Document for As Low As Reasonably Achievable (ALARA), March 4

EG&G, 1991c, Health and Safety Practices Manual, HSP 2 03, Operational Safety Analysis (OSA), May 31

EG&G, 1991d, Rocky Flats Plant Standard Number SX-164, Standard for Plant System and Component Identification and Labeling, July 23

EG&G, 1991e, Labeling and Marking Procedures for Radioactive Materials Containers

EG&G, 1992a, Health and Safety Practices Manual, HSP 9 07, Hazard Communication Program, July 30

EG&G, 1992b, Hazardous Waste Requirements Manual, Rev 1, As Amended, August 14

NFPA, 1985, 704, Standard System for the Identification of the Fire Hazards of Materials, National Fire Protection Association

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert E. Fiehweg 9/25/92
SWD Regulatory Programs Manager Date

11 0 MATERIALS COMPATIBILITY

The compatibility of materials used at RFP is controlled through review by users, S&H, and standard engineering design criteria, as defined in the Plant Standards Operational policies and procedures are established to prevent spills resulting from corrosive degradation of storage and transfer containers, or from uncontrolled mixing of materials with reactive properties Segregation and separation of materials in on-site transfer or off-site shipment is controlled by the separation and segregation chart shown in 49 CFR 177 648 and Section 11 0 of the On-Site Transportation Manual

Compatibility of containers with their contents and with their environment is addressed by plant engineers during the design phase for new facility installations through the use of Plant Standards These standards require appropriate design of equipment, in order that incompatible materials are not mixed, appropriate protection from or allowance for corrosion has been met, appropriate environmental criteria are met, and standard engineering safety and structural integrity are provided These Plant Standards are periodically reviewed by the Engineering Department and other concerned RFP departments for adequacy and applicability All engineering design packages are reviewed by numerous groups prior to approval for construction The comments and concerns of all the review groups are compiled and addressed, or the reason for not addressing the concern is explained Because of this review cycle, all appropriate environmental and compatibility concerns are addressed prior to commencement of construction on any project

Standard engineering practice at RFP uses the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Codes for pressurized containers and the American National Standards Institute (ANSI) 31 3 code for Chemical Plant and Petroleum Refinery Piping These codes address material corrosion in liquid or gaseous environments The standard practice for buried process waste lines is to use double containment in areas where visual inspection is not possible Asphalt coating is used on buried fuel pipe to protect against corrosion Cathodic protection is installed where its use is indicated Many of the design standards include physical constraints to prevent mixing of incompatible materials For example, gas cylinder and chemical tank hookups have mating connectors only for like materials

Uncontrolled mixing of materials is prevented by the use of vessels and transfer lines dedicated to a single chemical or waste stream in process operations "Hard" piping, with labeled pipes, is used for a given system The only point where mixing occurs is in vessels intended for reactions, under controlled conditions This control removes the necessity of cleaning transfer lines prior to the introduction of different materials

The mechanism for ensuring that ongoing operations or any changes in operations do not cause a materials compatibility problem is provided by the OSA and JSA Procedures An OSA or JSA is required for any operation at RFP with a potential risk for serious injury, radiation exposure to personnel, exposure to an Occupational Safety and Health Administration or DOE defined carcinogen, or damage to property or the environment These procedures establish safe practices through appropriate actions, controls, and periodic review

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert E. Fiehweg 9/17/92

SWD Regulatory Programs Manager Date

12 0 GOOD HOUSEKEEPING

Good housekeeping is the maintenance of a clean, orderly work environment and is encouraged and sustained through a number of programs at RFP Good housekeeping is an important factor in both spill prevention and spill control

Responsibility for good housekeeping is delegated to functional (manufacturing or operations) management through the line organizations The Facility Manager in each major building reports to an Operations Manager and has Facility Support Managers reporting to him/her Each has a responsibility to maintain a clean, tidy environment within the building Each level of management attempts to deal with housekeeping problems as they are identified If they are unable to instigate corrective action, they report the situation to their superior Good housekeeping awareness is part of the early training received by all employees This initial general indoctrination in policies and procedures is reinforced by documented group safety meetings which occur at least quarterly These safety meetings are a requirement for all buildings and areas Area housekeeping is often an item of review in the safety meetings Minutes of these meetings are prepared and maintained by the operative and administrative management of all groups for a minimum of one year

Daily maintenance of floors, hallways, storerooms, and work areas is a responsibility shared by employees of the area and trained custodial staff Clean-up of minor spills (typically less than one pint or one pound) of material inside buildings is typically accomplished quickly and efficiently by the generator of the spill, with appropriate input and guidance from groups such as the S&H, Radiation Monitoring, Waste Operations, Waste Programs and the SWD Any spill requires immediate contact of the supervisor and Shift Superintendent, who then initiates appropriate actions as delineated in this document under the Spill Reporting and Response Section. Additionally, end of shift clean-up duties are detailed in most functional work areas, or in shutdown procedures Good housekeeping practices decrease the potential for spills and other discharges to the environment

Good housekeeping, such as neat and orderly storage of bags, drums, and containers of chemicals (as well as chemical labeling, compatibility, and fire potential), and maintenance of means of egress are reviewed routinely by trained professionals to see that good practices are observed The means of reviewing the above operations include both normal operating procedures and periodic inspections Inspections of these operations inside buildings are conducted by the S&H and the Rocky Flats Fire Department.

There are eight Building Coordinators at RFP and also Building Representatives in each facility They have the responsibility to identify housekeeping problems, both indoor and outdoors, and notify the appropriate Operations Manager or Support Services Operations If a Building Coordinator becomes aware of a recurring problem or a housekeeping problem significant enough to require special attention, the Building Coordinator notifies the Support Services Manager

Operations Managers are responsible to see that the outside of their buildings and the surrounding areas are maintained neat and clean. If trash, debris, or other outdoor housekeeping problems are identified, the Operations Manager should contact Support Services Labor and/or Trucking to have the situation rectified Further detail can be found in the EG&G Conduct of Operations Policy Manual

S&H conducts periodic detailed inspections of each building complex These inspections are required by, and conducted in accordance with, written S&H procedures The purpose of these inspections is to provide adequate protection of workers from toxic and noxious materials, physical stresses, biological and ergonomic factors Good housekeeping is stressed during these inspections The inspections also give workers an opportunity to bring concerns regarding health issues in the work environment to S&H's attention. Formal reports, detailing deficiencies and recommending corrective action, are sent to the Operations Manager or Facility Manager responsible for the area in which deficiencies are found Follow-up inspections are conducted to verify that appropriate corrective action is taken Records of inspection and follow-up are retained by S&H and Data Entry

The Rocky Flats Fire Department also conducts a number of routine inspections Monthly inspections are conducted on production buildings or other high risk buildings High-risk buildings, for the purpose of these inspections, are those containing large quantities of flammable materials or with a potential large monetary loss in a fire All other plant buildings are inspected quarterly The above monthly and quarterly inspections are conducted to check for compliance with all RFP H&S, DOE, and NFPA requirements The Fire Department also conducts a detailed annual survey of all buildings The annual survey assesses the loss potential of the building and evaluates building components, material storage, process and occupancy changes, as well as housekeeping The Operations Managers and Facility Managers are required to provide timely notification to the Fire Department of any such changes in building operations and structures, however, the annual Fire Department Survey Program provides for proper evaluation of any new fire protection needs All of the Fire Department inspections and surveys are followed by a written report and corrective actions Records of inspections, surveys and follow-up are retained by the Fire Department Good housekeeping is an important aspect of these inspections

In addition, employees are involved in the identification of housekeeping problems and the development of new housekeeping procedures through the New Ideas Program One objective of the program is to prevent or reduce any environmental releases and to improve plant housekeeping Monetary awards are used as an incentive in the program for suggestions that meet certain criteria This program is open to all employees, thus encouraging the improvement of plant housekeeping

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CATEGORY 1	Organization	ENVIRONMENTAL MANAGEMENT

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By [signature] SWD Regulatory Programs Manager 9/17/92 Date

14 0 MAINTENANCE

14 1 CORRECTIVE MAINTENANCE

Corrective maintenance is defined as maintenance performed to repair or restore, facilities, systems, equipment, and/or components that are deficient, have failed in service, are malfunctioning, or violate administrative/technical requirements The Integrated Work Control Program (IWCP) establishes a standard process for identifying and controlling all corrective maintenance The IWCP manual (EG&G, 1991) outlines the procedures to be followed, from identifying needed corrective maintenance to completing work packages The IWCP procedures are applicable to all RFP workers and subcontractors involved in on-site work Any person who identifies a deficiency is responsible for notifying, and then submitting a Work Control Form to, the Shift Manager The Shift Manager screens the Work Control Form to determine if emergency priority or other immediate corrective actions are required

The Operations Manager assigns a Responsible Organization to have primary, or lead, responsibility to resolve the deficiency or complete required action on the work request. The Operations Manager retains many responsibilities, including assigning appropriate priority to Work Control Forms Priority of corrective action to be taken is defined as follows

1	Emergency	Requires immediate action to prevent serious personal injury, harm to the environment, a breach to security, or a serious loss of property
2	Urgent	Requires rapid action to ensure safety to personnel and/or the environment or correct problems deemed critical to sustain the current mission of the facility
3	Required	Requires routine action to comply with technical, or administrative requirements
4	Desirable	Requires routine action to implement improvements, or correct deficiencies, not directly related to sustaining the mission of the facility

The responsible organization takes the actions necessary to complete the corrective maintenance This includes developing a work package, ordering, tracking, and receiving material, coordinating the action of other support organizations, and coordinating the supervision of the actions A formal work package is not required for an emergency action, but a work package appropriate for the corrective action is prepared after the emergency condition has been corrected This work package reflects the actions taken during the emergency The organization performing corrective action maintains an Emergency Action Work Log of the event to assist in the preparation of the work package, the log is included in its appendix

The status of work requests and deficiency reports initiated by a Work Control Form are tracked using the computerized Work Control Database If the Maintenance Department has been assigned as the responsible

organization, the computerized Maintenance Management System will be used to track, plan, and schedule the resolution of work requests

14 2 PREVENTIVE MAINTENANCE

Preventive Maintenance (PM) includes predictive, periodic, and planned maintenance actions taken to maintain a piece of equipment within design operating conditions, to extend its life, or to prevent safety or environmental problems Predictive maintenance involves continuous, or periodic, monitoring and diagnosis in order to forecast equipment failure Periodic maintenance is accomplished on a routine basis and may include any combination of internal inspections, overhauls, and component or equipment replacements Planned maintenance is taken prior to equipment failure and is initiated based on predictive or periodic maintenance results, vendor recommendation, or experience Detailed procedures on the PM process can be found in the IWCP Section 7

PM Work Packages contain the necessary information for work to be completed This information includes task instructions, a Bill of Material, post-maintenance testing instructions, drawings, and authorizations There are three types of PM Work Packages Type A packages are for work that requires breaching of primary containment of a radioactive system or any work on vital safety systems Type B work packages are for work involving confined space entry, work that requires Health & Safety support, work requiring assistance from Plant Engineering, and complex work requiring detailed task planning, development of unique step-by-step instructions, or coordination of multiple crafts Type C work packages are for all other work not requiring a Type A or B package

The development of PM Work Packages begins with the Operations Manager (OM), who maintains a list of equipment that requires PM PM Work Package development can be initiated, at any time, by the OM or any other individual that identifies the need for PM of new or existing equipment The PM Work Package development is initiated by the completion of a Work Control Form which is then submitted to Plant Engineering The initiator of the work control form must provide his or her name, employee number, date, time of initiation, originator's organization, building number, telephone extension, and a description of the equipment requiring a PM package, including make, model, type, vendor, property control and equipment management numbers, description, building number, and location

Plant Engineering provides the technical requirements for the PM action and PM frequency based on manufacturer information and other available sources They also provide technical requirements for Post Maintenance Testing Plant Engineering then submits the technical specifications to Support Services Planning and Scheduling (SSP&S), where development of the work package is completed, incorporating advice from Health and Safety and Quality Assurance SSP&S will also assign a title to the work package and decide which organization will perform the PM Development of the work package includes planning the PM Work Package, developing and submitting material requirements to logistics and determining support organization requirements Planning and development of a detailed Work Package which contains technical, quality and safety requirements is done with input from Support Services Central Planning, Plant Engineering, Health & Safety, Quality Assurance, Craft Managers and Craft Personnel, and Logistics

Once the PM Work Package has been planned and developed, it is approved by the manager of the organization providing the crafts performing the work, Health & Safety (Type A and B packages only), Plant Engineering (Type A and B packages only), Quality Assurance (Type A and B packages only), and any other organizations that SSP&S Planner designates The Work Package is submitted by the support Services Manager to the OM for final approval SSP&S then forwards the completed PM work package and the Work Control Form to the OM SSP&S then provides the necessary information to the Equipment Management/Preventive Maintenance (EM/PM) Administrator for entry into the EM/PM Administration Database

The EM/PM Administrator distributes PM Orders to the OM for incorporation into the Plan-of-the-Day PM Work Packages are only copied upon receipt of the Work Order The PM Order lists a completion period in which time the PM must take place and after which the PM order will be considered delinquent (the EM/PM Administrator will issue Lockout Notices against delinquent equipment in accordance with the delinquency lockout requirements established by Plant Engineering during work package development)

The Job Supervisor must authorize the work by signing the PM Order before work can begin Performance of PM work and Post Maintenance Testing must be done in accordance with Section 5 of the IWCP Materials, supplies, and spare parts required for completion of PM work are acquired as described in Section 4 of the IWCP The crafts person performing PM work will note any problems with the equipment by making comments on the PM Order The Job Supervisor will review the comments before forwarding the completed PM Order to OM The OM will send the EM/PM Administrator a copy of the completed PM Order with any comments for entry into the EM/PM Database The OM will retain completed PM Orders and PM Work Packages as required A Work Control Form is filled out to correct any problems identified during PM

In general, the PM system currently in place at the RFP adequately addresses BMPs and spill prevention and control through normal implementation of PM work However, if deficiencies in equipment or operations related to BMPs or spill prevention and control are identified that are preventable through modified PM operations, the PM operations can be modified by submitting a Work Control Form All personnel at the RFP including those SWD personnel with responsibilities related to this SPCC/BMP plan, have standing to modify PM operations through submittal as a work control form

14 3 REFERENCES

EG&G, 1991, Integrated Work Control Program, Revision 1, June

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert E. Fiehweg 9/25/92

SWD Regulatory Programs Manager Date

15 0 SECURITY

A security system is in place at RFP 24 hours per day to prevent accidental or intentional unauthorized entry into RFP Any such intrusion could lead to sabotage, vandalism, theft, or other illegal acts, any one of which might result in a release of hazardous or toxic substances into the environment. These security precautions are defined in the Rocky Flats Security Manual, and are primarily the responsibility of the Security Department Highlights of security functions are given in this section

The Rocky Flats facility consists of 6,500 acres of Federal government-owned property This property is enclosed within a three strand barbed wire cattle fence on which "No Trespassing" signs are posted The manufacturing portion of the plant is located in the approximate center of this property, with two access roads crossing the property One road enters from Colorado Highway 93, located to the west of the manufacturing facilities, and the other road enters from Indiana Street to the east Access through both the east and the west gates is controlled by armed guards 24 hours per day The production and support areas of the plant are approximately 400 acres in size, and are largely surrounded by a six-foot-high chain link fence This fence is topped with two feet of three strand barbed wire There are also two main gates (east and west) in this fence A road inside the fence permits vehicular patrol by armed guards and immediate response capabilities in the event of an incident such as attempted intrusion Within the production and support areas there are internal security areas that isolate classified information and nuclear material from the remaining Controlled Areas of RFP The terrain surrounding RFP is rough, serving as a natural barrier to normal vehicular traffic RFP also is equipped with an extensive lighting system in the 400-acre secured area that operates throughout each night and in foggy and cloudy weather

All persons entering RFP must have an appropriate security badge Persons other than employees, contractors, and cleared consultants must have prior approval, and must be identified, logged in by a guard, and issued a temporary badge before being permitted to enter RFP All personnel must wear their badges fully displayed while at the RFP Visitors must be escorted within certain areas of the plant by an EG&G or DOE employee All vehicles entering RFP are subject to search at any time while on RFP property

Two-way radio and telephone communications are maintained between the gate guard posts and RFP Protection Dispatch Station Closed-circuit television provides monitoring of gate operations by the Dispatch Station There are also other features of the security system that would alert protective forces in the event of an attempted entry by unauthorized personnel

The RFP Security Force has in excess of 200 uniformed personnel to provide 24-hour protective service to the facility All security personnel are on continuous call in the event of emergencies Plans and procedures related to unusual situations such as riots, demonstrations, major accidents, floods, and other emergencies have been prepared and approved These plans will be put into effect as they are needed These plans and procedures define appropriate responsibilities and actions to be taken, and are incorporated into the Rocky Flats Plant Emergency Plan and the RFP Security Plan

These security measures are considered adequate to prevent spills of materials due to acts of vandalism by outside parties

EG&G ROCKY FLATS SPILL PREVENTION CONTROL COUNTERMEASURES BEST MANAGEMENT PRACTICES PLAN	Manual Chapter No Page Effective Date	21000-SPCC/BMP 16 0 1 of 3 September 1992
'ATEGORY 1	Organization	ENVIRONMENTAL MANAGEMENT

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CONTROL OF SWD Approved By Robert E. Fiehweg 9/17/92

SWD Regulatory Programs Manager Date

16 0 EMPLOYEE TRAINING

16 1 GENERAL TRAINING

Employee training and education programs are used by RFP to help prevent environmental incidents and to provide for the rapid identification and reporting of spills Rapid identification and reporting of spills aids rapid response and abatement. These training programs ensure that employees, at all levels of responsibility, understand the processes and materials of their jobs, potential safety hazards, and procedures for preventing environmental discharges In addition, employees are trained to understand their roles and responsibilities during emergency situations

Training begins on the first day of employment at RFP The New Hire Orientation program, known as the General Employee Training (GET) program includes an environmental presentation, as well as discussions of environmentally related areas such as Safety and Hygiene, Fire Protection, Industrial Safety, Radiation Safety, Security, and Emergency Preparedness The GET program is described in "General Employee Training" (EG&G, 990) The environmental presentation details RFP policies and programs regarding protection of the environment Specific indoctrinations are also provided to new hires expected to work with toxic substances such as plutonium All RFP employees are required to complete this training and receive periodic updates with specific on-the-job instructions from their supervisor

Specific items covered during General Employee Training that relate to spill prevention, control, and countermeasures include

- the Hazards Communication Program, specifically
    - the NFPA "Diamond" method of Chemical Hazard Rating,
    - Material Safety Data Sheets and the meaning of Threshold Limit Value, Permissible Exposure Limit, and similar environmental concepts and the identification of spill leak and disposal procedures,
    - the necessity for site-specific training courses,
    - the prevention of accidental chemical spills by not using chemicals unless the employee has been specifically trained to do so,
    - RFP procedures regarding spills, uncontrolled chemicals, and proper disposal of hazardous materials,
- housekeeping and its relationship to safety and minimization of the spread of waste and contamination,
- the Fire Protection Program, with specific emphasis on
    - recognition of special fire protection needs at RFP,
    - identification of types of fires, fire alarms, protection systems, barriers and extinguishing methods, and reporting procedures,
    - recognition of the requirements for storage and work permits relative to potential fire hazards,

- the Emergency Preparedness program, including

  - recognition of employee responsibilities for emergency preparedness and plant emergency response,
  - credible emergencies that could occur;
  - alarm types, notification methods, and proper responses,

- security at RFP, including employee responsibility for compliance with the security program, and

- a section of the course that specifically addresses spill prevention and BMPs

Initial GET is supplemented by GET refreshers that are provided every other year This GET refresher course, and the section that addresses SPCC/BMP issues, are recent additions to the training programs

Another aspect of the training program at RFP is Building Indoctrinations These indoctrinations cover subjects such as response to nuclear alarms, fire alarms, emergency notifications and actions pertinent to specific work areas, hazardous materials handling, health hazards, storage and waste disposal practices, area hazards, plant rules, and building rules A permanent record is kept for each topic and the employee signs the record, thus indicating an understanding of the material covered Periodic re-indoctrination covering the same material is required for each employee

A certification training program for operating and supervisory personnel is also required Certification programs provide detailed training on specific topics, and require passing an examination to work in these areas The programs, given on an annual basis, cover such topics as Transportation-Hazardous Materials Certification, Maintenance Hazardous Materials Certification, and Chemical Operators Certification

The Performance Based Training (PBT) Department is responsible for administration, training development, delivery of the training program, and recordkeeping PBT is given to all personnel associated with the handling, packaging, testing, shipment, processing, and certification of waste Among these are the RCRA Custodian Training and Waste Generator Training Operators are required to have process specific training and qualification prior to performing work Requirements for this training are given in PBT procedures and RFP policy

Persons directly involved with the transportation of hazardous materials are required to complete the DOT Hazardous Material Transportation Course This course is taught by the Traffic Department of EG&G

In addition to specific training programs, periodic Safety Meetings are held The subject matter is the choice of each supervisor Seventy-five percent of the meetings must address on-the-job safety, and 25 percent cover general interest items

Employees at RFP that have responsibilities in the environmental field are trained in Occupational Safety and Health Administration (OSHA) requirements for worker protection at hazardous waste sites if they work in RCRA-regulated areas The requirements for this course are outlined in 29 CFR 1910 120 This course is offered by the RFP training department, and helps to raise awareness of potential problem areas, potential health and safety threats that may be encountered, and sources of contamination (or releases to the environment) during environmental work.

The Haz-Mat Team has special training requirements to be adequately prepared to respond to emergencies This training is detailed in the Haz-Mat SOPs At the current time, this training initially consists of an 80-hour

Colorado Safety Institute (CSI) Level I Course and a 24-hour awareness course The initial training is supplemented at least annually by 24 hours of additional training

In addition to the above training requirements, posters and notices are occasionally used to help remind employees of their responsibilities regarding spill prevention and control Articles and notices are also planned for inclusion in the weekly Rocky Flats newspaper

16 2 POLLUTION PREVENTION AWARENESS TRAINING

DOE Order 5400 1 requires initiation of a program that will increase employee awareness in the area of pollution prevention and demonstrate how employees can contribute to this effort A Pollution Prevention Awareness Plan that outlines how this program will be initiated and maintained is being negotiated between EG&G and DOE The ultimate goal is to prevent pollution, rather than to clean up or treat preventable pollution Spills are a potential source of pollution that are preventable The Pollution Prevention Awareness Plan has been included in the RFP Waste Minimization Plan (WMP) as a part of the Waste Minimization Awareness Plan Waste minimization personnel have worked with the Communications and Training Departments to provide employee waste minimization awareness activities These activities have included poster displays, video tapes, presentations at safety meetings, and periodic articles in the plant newspaper

16 3 SPCC/BMP PERSONNEL TRAINING

Personnel in the SWD that are responsible for the implementation and maintenance of this plan are familiar with the policies and procedures relevant to this plan Among these are occurrence response and reporting procedures, equipment management policies, engineering design standards, and material handling policies Familiarity with these programs and procedures enables proper and thorough implementation of this plan by SWD personnel By identifying deficiencies and problem areas, BMPs can be implemented where applicable

SWD personnel with SPCC/BMP responsibilities are familiar with the contents of, and relationships between, the documents in the reference list for this plan The most important of these are

- "Rocky Flats Emergency Plan,"
- "Occurrence Reporting Process," 1-10000-ADM 16 01,
- "RCRA Contingency Plan,"
- "SWD Implementation of the Control and Disposition of Incidental Waters," 5-21400-OPS CON 06,
- "Rocky Flats Plant Standards Manual," and
- SWD Spill Diversion Procedure

SPCC/BMP personnel are also trained in the 29 CFR 1910 120 (OSHA) requirements outlined earlier in this section

16 4 REFERENCES

EG&G, 1990, General Employee Training Resumption, October

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SWD Regulatory Programs Manager Date

APPENDIX 1

SURFACE WATER DIVISION CHARTER

Provided in this appendix is the charter of the Surface Water Division from April 1992 The EG&G Environmental Management Department was re-organized on September 8, 1992 This re-organization impacts this charter and may necessitate changes to this charter in the future

Surface Water Division Charter

1 0 Mission

The Surface Water Division (SWD) provides surveillance of surface water conditions on and around the Rocky Flats Plant, provides oversight of plant operations that could impact surface water quality, manages surface water sampling and analysis programs, maintains water discharge permits, coordinates detention pond discharge with the Department of Energy (DOE) and various regulatory agencies and municipalities, assures compliance with applicable environmental water laws, supports upgrades to plant operations pertaining to surface water, and performs or supports developmental activities for improved control, monitoring and/or treatment to meet existing regulatory requirements and to proactively address future issues related to comprehensive management of RFP surface waters Water management for the future will include enhanced real time monitoring conservation through use minimization, recycle and reuse, diversion, dispersion, added storage and transfer capabilities, and a possible variety of discharge reduction options (up to zero discharge) including wetlands, large evaporative lakes, and forced evaporation Monitoring is conducted to demonstrate compliance with applicable existing and proposed regulations and to ensure that environmental impacts from plant activities are as low as reasonably achievable

2 0 Requirements and Deliverables

2 1 Requirements

Several agencies issue orders, regulations, and guidances designed to assure high surface water quality The following is a summary of those requirements

2 1 1 DOE Orders

2 1 1 1 DOE Order 5400 1 "General Environmental Protection Program"

2 1 1 2 DOE Order 5400 2 "Environmental Compliance Issue Coordination"

2 1 1 3 DOE Order 5400 5 "Radiation Protection of the Public and the Envirornment"

2 1.1.4 DOE Order 5480 1B "Environment, Safety, and Health Program for Department of Energy (DOE) Operations"

2 1.1.5 DOE Order 5480 4 "Environmental Protection, Safety, and Health Standards"

2 1 1.6 DOE Order 5480 5 "Safety of Nuclear Facilities"

2 1 1 7 DOE Order 5484 1 "Environmental Protection, Safety, and Health Protection Information Reporting Requirements"

2 1 1 8 DOE Order 5700 6B "Quality Assurance"

2 1.2 Legislation

2 1 2 1 Title 42 U S C 7101, *et seq* , The Department of Energy Organization Act, which establishes the statutory responsibility to ensure incorporation of national environmental protection goals in the formulation of energy programs, and advance the goal of restoring, protection, and enhancing environmental quality, and assuring public health and safety

2.1 2 2 Title 33 U S C 1251, *et seq* , The Federal Water Pollution Control Act, (aka, Clean Water Act) as amended, which provides requirements to restore and maintain the chemical, physical, and biological integrity of the Nation's waters

2 1 2 3 Title 40 CFR 122, "EPA Administered Permit Programs, The National Pollutant Discharge Elimination System"

2 1 2 4 Title 40 CFR 125, "Criteria and Standards for the National Pollutant Discharge Elimination System"

2 1 2 5 Title 33 U S C 1251, *et seq*, "Clean Water Act"

2 1 2 6 Title 40 CFR 129 "Toxic Pollutant Effluent Standards"

2 1 2 7 Title 40 CFR 131, "Water Quality Standards"

2.1 2 8 Title 40 CFR 133, "Secondary Treatment Regulation"

2 1 2 9 Title 42 U S C 300 f, *et seq*, "Safe Drinking Water Act"

2 1 2 10 Title 40 CFR 141, "National Interim Primary Drinking Water Regulations Implementation"

2 1 2.11 Title 40 CFR 143, "National Secondary Drinking Water Regulations"

2 1 3 Colorado Legislation

2 1 3 1 Colorado Site-Specific Standards for Rocky Flats

2 1 3 2 Colorado Primary Drinking Water Regulations, Colorado Department of Health, October 30, 1981

2 1 3 3 Colorado Rules and Regulations Pertaining to Radiation Control, Colorado Department of Health, December, 1985

2 1 3.4 Colorado Water Quality Standards, Code of Colorado Regulations Title 5 -- Department of Health, Chapter 1002 -- Water Quality Control Commission, Article 8 -- Water Quality Standards and Stream Classification, effective June 19, 1974, *et seq*, July 30, 1987

2 1 3 5 Colorado Water Quality Control Act (Colorado Revised Statutes, Title 25 -- Water Quality Control, Reenacted by Colorado Laws of 1981, *et seq*)

2 1 3 6 State of Colorado Water Standards

2 1 4 Executive Orders

2 1 4 1 Executive Order 12088, "Federal Compliance with Pollution Control Standards," of 10-13-78, which requires that all Federal facilities and activities comply with applicable pollution control standards

2 1.4 2 Office of Management and Budget (OMB) Circular No A106, "Reporting Requirements in Connection with the Prevention, Control, and Abatement of Environmental Pollution of Existing Federal Facilities," of 12/31/74

2 1 5 Other Drivers

2 1 5 1 Interagency Agreement

2 1 5.2 Agreement in Principle

2 1 6 E G & G Standing Orders

2 2 Deliverables

The SWD has numerous deliverables A summary is provided below

2 2 1 The surface water section of the monthly environmental report is supported by review of data generated through the Environmental Monitoring and Assessment Division

2 2 2 The surface water section of the annual site environmental monitoring report is supported by providing review of data

2 2 3 Surface water data are summarized for the EIS/ODIS report due April 1st each year

2 2 4 Surface water data support is given for preparation of SARA Title III reports due June 1st of each year

2 2 5 Discharge Monitoring Reports (DMRs) are prepared monthly for DOE submittal to the U S Environmental Protection Agency (USEPA) in compliance with the National Pollutant Discharge Elimination System (NPDES) permit

2 2 6 An annual summary of NPDES data is prepared during August of each year for DOE submittal to USEPA

2 2 7 Monthly flow summaries are prepared and sent to pertinent cities (namely City of Broomfield and City of Westminster)

2 2 8 Surface water sections of the Catalogue of Monitoring Activities are reviewed and updated annually

2 2 9 Surface water monitoring sections of the Environmental Program Improvement Plan (EPIP) are reviewed annually and updated at least every three years Final submission of any annual EPIP input is required prior to November 9th each year

2 2 10 Budget requirements are provided for completion of Five Year Plan and base programs planning documents such as Work Breakdown Structure documents

2 2 11 Application for NPDES renewal is prepared and submitted six months prior to existing permit termination (A new NPDES permit is pending)

2.2 12 The Spill Prevention Countermeasures and Control/Best Management Practices (SPCC/BMP) plan is being finalized Completion expected 9/91

2 2 13 The Surface Water Management Plan

2 2 14 Master Drainage Plan

2 2 15 Procedures

The following is a list of procedures prepared by SWD or have key input by SWD EM and other organizations have many other procedures that govern SWD operations

Sampling Procedures for Surface Waters
A-3, B-3 Discharge and Irrigation
Runoff, Flood and Spill Control Procedure
A-4, B-5, C-2 Discharge
National Pollution Discharge Elimination System
Control Procedure for Water Spraying from the Landfill Pond and Pond A-2
Runoff Water Sampling for Pondcrete Storage Areas
Dam Inspection Procedure

General Emergency Response
Surface Water Monitonng and Control
Incidental Water Monitoring and Control
Incidental Water Control
Monitonng Audits (to be wntten)
Surface Water Operatiosn (to be written)
Respirometer Operations
Microtox Operations
Discharge and Monitonng (to be written)

2.2.15 "Tiger Team" Audit Findings Action Plans

The "Tiger Team" issued seven audit findings and six best management practices (BMPs) related to surface water The SWD has responsibility for several of the action plans that address those findings and BMPs and has oversight/input responsibility for others as listed below

- SW/AF-1 Discharge Monitoring Report Deficiencies (Responsible)
- SW/AF-2 Need for Certified Operators at STP (Input)
- SW/AF-3 Unpermitted Discharges from East and West Guard Posts (Oversight)
- SW/AF-4 Quality Assurance-Surface Water Sample Collection, Handling, and Documentation (Input and Oversight)
- SW/AF-5 STP Deficiencies (Oversight)
- SW/AF-6 Work Order Lag Time (Oversight)
- SW/AF-7 Deficiencies at the Spray Irrigation Site (Responsible)

- SW/BMP-1 Deficiencies in SPCC/BMP Plan (Responsible)
- SW/BMP-2 Lack of Flow Measurement at C-1 (Responsible)
- SW/BMP-3 Inadequate Protocols for Timely Identification of Pollutant Release to STP (Input and Oversight)
- SW/BMP-4 Cooling Tower Blowdown at Bldg 774 (Oversight)
- SW/BMP-5 Dam Inspection Reports (Input and Oversight))
- SW/BMP-6 Laundry Operations (Input and Oversight)

2.2 16 NPDES FFCA

The EPA initiated negotiations with DOE after BOD violations in Pond B-3 discharges in 1988 and the chromic acid incident in 1989 The FFCA (which was signed March 1991) required numerous actions to include increased monitoring and improved control of process, sanitary and surface waters SWD has primary oversight responsibility to implement the FFCA

2 2 17 Chromic Acid Incident Corrective Action Plan

The chromic acid incident investigations identified numerous corrective actions required to detect upset conditions and prevent discharge of process materials by identification and correction of possible cross connections between process areas and sanitary piping SWD will perform oversight of the corrective actions These corrective actions became a major portion of the NPDES Federal Facilities Compliance Agreement (FFCA)

2 2 18 STP Compliance Plan

The FFCA requires that RFP implement a nine million dollar upgrade program for the Sewage Treatment Plant SWD provides oversight and technical support

2 2 19 Vadose Zone Monitoring Plan

This plan requires a charactenzation of the Vadose Zone below the sludge drying beds Appropnate remediation if contamination is detected will follow

3 0 SWD Organization

The SWD is divided into three separate functional organizations There is significant continual interaction between the three functions, most responsibilities of the division impact on each of the three functions The breakdown of activities listed below is to be used as an outline of primary responsibilities

3 1 Regulatory Programs

- NPDES permit submissions, negotiations, and maintenance
- Storm water permitting
- NPDES FFCA Implementation
- Regulatory sampling and analysis
- Legal Matters - Evaluation and interpretation of existing laws, regulations, compliance agreements, orders, guidances, directives Review and interpretation of new or proposed modifications to those documents (Attend Colorado Water Quality Control Commission Heanngs)
- Out of Specification reporting
- Review of water data to prepare various reports
  - Monthly environmental monitoring report
  - Annual Site Environmental Report
  - Discharge Monitoring Reports - Monthly
  - Pond Discharge Reports - Monthly
  - Input to various oversight agencies
  - NPDES FFCA reporting - Quarterly
- Responding to requests for information from regulatory agencies, oversight groups, governmental agencies, and the public (i e , Freedom of Information Requests)
- Preparation and maintenance of SPCC/BMP Plan
- Establish monitoring requirements for surface water and publish in Environmental Monitoring Plans
- Develop regional baseline and Segment 5 water quality data
- Tiger Team Audit Action Plans
- Procedures
- Quality Assurance/Quality Control requirements
- Establish ambient water monitoring requirements
- Data Base Development
- Technical Development Support
- Surveillance of plant activities
- Process control monitoring
- Incident water control
- Pathways analysis/controls
- Resumption support
- Review of plans and engineering projects!
- QA

3 2 Surface Water Upgrades

- Water management strategy, planning, and resource allocation
  - Work Package development and coordination
  - Five Year Plan
  - Base Programs
- Develop and engineer treatment systems
- Develop and engineer water management systems
  - A-4 Enclosure
  - Treatment system upgrades
  - Treatment system documentation including as-built drawings
  - Procedures for treatment system
  - Treatment equipment testing/verification
- Water Control/Recycle
  - C-2 recycle project
- Pond Upgrades
  - Dam reinforcement engineering
  - Piping and conveyance for transfers
- Treatment System By-Products/Waste Disposition
  - Used filter sock disposition
  - GAC regeneration/disposition
- Unplanned Pond Release Contingency Plan
- Technical administration of water control contracts
  - Riedel water treatment
  - Los Alamos analytical, speciation, and treatment development
- Coordinate field treatment, transfer, and diversion operations
- Remote monitoring and control systems
  - Flumes/sampling stations
- Sewage Treatment Plant (STP) remote/automated monitoring
- Water Quality Assurance
  - Refining treatment system performance
  - Improving filtration
  - Real-time WQ indicators/analysis
  - Los Alamos work (analysis, characterization, treatment)
- Oversight and assessment of water quality program
  - Refine understanding of contaminant levels
  - Provide recommendations on adequacy of sampling
  - Make recommendations for paring surface water sampling program
  - Report results—RFPs and external publications
- Pond System Biology
  - Refine understanding of pond ecosystem
  - Evaluate benthic biota in ponds
  - Consider options for "natural" control of pond contaminants
  - Report results—RFPs and external publications
- Emergency Response Support/Spill Control
- Budget Development and Tracking
- Technical Writing Support
- Procedures
  - Pond Operations
  - Pond Water Treatment
  - Monitoring Systems

3 3 Planning and Implementation

- Coordinate all water management planning activities
- Implementation of water management components
  - Real time monitoring/modeling
  - Water use/ discharge minimization
  - Recycle
  - Expanded transfer capabilities
  - Dispersion
  - Evaporation
  - Wetlands
  - Diversion
- Pond Upgrades
  - Dams
  - Pumps
  - Piping
  - Inlet/Outlet structures
  - Flumes/sampling stations
- Support to other programs
  - Permit impact planning
  - Legal interface
  - Groundwater (surface water coordination)
  - Spill control (Emergency Response Data)
  - Public information
  - Water treatment needs
  - Operational impacts (Real time data/models)
  - Development support
  - Flow, capacity records
- Input to Environmental Program Improvement Plan (EPIP)
- Surface Water Modeling
  - Sediment report
  - Hydrology
  - Open channel hydraulics
- Oversight and records of pond operations
- Drainage investigations and improvements
- Surveillance of hydraulic structures
  - Pond levels
  - Dam Safety Inspections
    - Piezometer observations
    - Embankment evacuation
  - Culvert inspection

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SWD Regulatory Programs Manager Date

APPENDIX 2

DRAINAGE CONSTRUCTION, MODIFICATION & INCIDENT TIMELINES

This appendix contains timelines discussing construction, modifications, and incidents pertaining to the A-, B-, and C-Series Drainages This timeline does not present a comprehensive history of NPDES permit exceedances Incidents in which a release or spill was diverted to or successfully contained in one or more of the holding ponds are indicated with an asterisk Since the time Ponds A-1, A-2, B-1, B-2, and C-1 have had the capability to handle spills, there have been seventeen incidents in which the holding ponds were successfully used to manage potentially contaminated waters The timelines were compiled from documents obtained from the RFP and references are provided where appropriate Notations indicated in italics provide additional insight regarding specific textual excerpts

A-SERIES DRAINAGE PONDS TIMELINE

January 1954 - An earthen dam was constructed "across Walnut Creek, below 71 building " The new pond was provided with a discharge pipe and concreted rock spillway (RYAN, E S , DOW CHEMICAL COMPANY, 1954, "PROGRESS REPORT - WASTE DISPOSAL UNIT - JANUARY 1954," INTERNAL LETTER TO J EPP, DOW CHEMICAL COMPANY, FEBRUARY 5) *This pond was known as Pond 1 until the early 1970s, when it was re-designated Pond A-1*

March 1954 - Release of water from the pond formed by the earthen dam on Walnut Creek began High winds during the previous month caused damage to the dikes of the four ponds (believed to be Ponds 1, 3, 4 and 5) Rocks were placed along the dike faces to repair the dikes and prevent recurrence of the problem (RYAN, E S , DOW CHEMICAL COMPANY, 1954, "PROGRESS REPORT - WASTE DISPOSAL UNIT - MARCH 1954," INTERNAL LETTER TO J EPP, DOW CHEMICAL COMPANY, APRIL 2)

August 1954 - Roads were being constructed to the Walnut Creek Pond (Pond 1) and to the three retention ponds (Ponds 3, 4, and 5) on South Walnut Creek Construction of concrete retention walls and spillways began around the discharge pipes of the three retention ponds to prevent damage during high winds (RYAN, E S , DOW CHEMICAL COMPANY, 1954, "PROGRESS REPORT FOR THE MONTH OF AUGUST 1954 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, SEPTEMBER 3)

September 1954 - Construction of the roads and concrete wall was completed (RYAN, E S , DOW CHEMICAL COMPANY, 1954, "PROGRESS REPORT FOR THE MONTH OF SEPTEMBER 1954 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, OCTOBER 6)

March 1955 - High winds caused damage to the dike of the pond on Walnut Creek (Pond 1) Rock fill was to be placed at the dike for repair and prevention of further damage (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF MARCH 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, APRIL 4)

April 1955 - Construction of the concrete retaining wall around the discharge pipe of Pond 1 was completed, finishing ongoing concrete work on Pond 1 (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF APRIL 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, MAY 2)

May 1955 - The dike of Pond 1 received minor damage from heavy rains (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF MAY 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, JUNE 1)

November 1957 - Repair of the spillway and dike of Pond 1 began (RYAN, E S , DOW CHEMICAL COMPANY, 1957, "HISTORY REPORT - NOVEMBER 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, DECEMBER 5)

December 1957 - Repairs on Pond 1 were essentially finished Reforming of the discharge channel of Pond 1 remained to be done (RYAN, E S , DOW CHEMICAL COMPANY, 1958, "HISTORY REPORT - DECEMBER 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JANUARY 10)

April 1957 - Heavy flow from runoff caused Pond 1 to overflow onto the concrete spillway The concrete and rock channel west of the dike were damaged when the channel was undermined by the water (RYAN, E S ,

DOW CHEMICAL COMPANY, 1957, "HISTORY REPORT FOR THE MONTH OF APRIL 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, MAY 3)

May 1957 - Heavy rains resulted in further damage to the spillways at Pond 1 (RYAN, E S , DOW CHEMICAL COMPANY, 1957, "HISTORY REPORT FOR THE MONTH OF MAY 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JUNE 6)

December 1957 - Repairs on Pond 1 were essentially finished Reforming of the discharge channel remained to be done (RYAN, E S , DOW CHEMICAL COMPANY, 1958, "HISTORY REPORT - DECEMBER 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JANUARY 10)

May 1958 - The dike and spillway of Pond 1 gave away due to heavy rain The break occurred in the southeast corner of the pond Installation of a culvert and gate was requested to prevent recurrence of this type of damage (RYAN, E S , DOW CHEMICAL COMPANY, 1958, "HISTORY REPORT - MAY 1958 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JUNE 4)

July 1958 - A trench was dug at Pond 1 to allow the pond to drain enough for the installation of a culvert and gate (RYAN, E S , DOW CHEMICAL COMPANY, 1958, "HISTORY REPORT - JULY 1958 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, AUGUST 4)

October 1958 - Pond 1 was deepened and drained by a dragline and bulldozer in preparation for the installation of the culvert and gate assembly Three small temporary ponds were made west of the pond to hold runoff during construction (RYAN E S , DOW CHEMICAL COMPANY, 1958, "HISTORY REPORT - WASTE DISPOSAL CO-ORDINATION GROUP - OCTOBER 1958," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, NOVEMBER 6)

November 1958 - The new discharge pipe (culvert) and gate were installed at Pond 1 The area around the pipe intake was rocked and grouted, and the entire pond area was reworked (RYAN, E S , DOW CHEMICAL COMPANY, 1958, "HISTORY REPORT - WASTE DISPOSAL CO-ORDINATION GROUP - NOVEMBER 1958," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, DECEMBER 4)

July 1959 - The Pond 1 control gate was opened to empty the pond in preparation for enlargement of the impoundment area (RYAN, E S , DOW CHEMICAL COMPANY, 1959, "HISTORY REPORT - WASTE DISPOSAL CO-ORDINATION GROUP - JULY 1959," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, AUGUST 10)

October 1959 - Rocks were placed on the water side of the Pond 1 dike (RYAN, E S , DOW CHEMICAL COMPANY, 1959, "HISTORY REPORT - WASTE DISPOSAL CO-ORDINATION GROUP - OCTOBER 1959," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, NOVEMBER 5)

March 1960 - Damage to the area around the control gate caused by wave action at Pond 1 was repaired with fill and grouted (RYAN, E S , DOW CHEMICAL COMPANY, 1960, "HISTORY REPORT - WASTE DISPOSAL CO-ORDINATION GROUP - MARCH 1960," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, APRIL 11)

April 1967 - Heavy rains and subsequent runoff damaged the dike of one of the retention ponds (specific pond not identified) The dike was repaired and an overflow culvert was installed at the north end of the dike (RYAN, E S , DOW CHEMICAL COMPANY, 1967, "STATUS REPORT - WASTE DISPOSAL COORDINATION - APRIL 1967," INTERNAL LETTER TO E.A PUTZIER, DOW CHEMICAL COMPANY, MAY 9)

August 1970 - Soil was removed from the 771 outfall area These soil removal activities continued in September, and were resumed in February 1971 The soil contained up to 1,300 dpm and rocks in the area had direct counts up to 10,000 cpm It was expected that, by the end of soil removal operations, a total of 252 drums of soil would be removed (PILTINGSRUD, C W , DOW CHEMICAL COMPANY, 1971, "CONTAMINATION AT THE OUTFALL OF BUILDING 771 STORM DRAIN," INTERNAL LETTER TO L M JOSHEL, FEBRUARY 18)

Based on annual reports, the use of alpha-numeric designations for the ponds, as opposed to the strictly numeric designations, began in approximately 1971

May 1971 - Sampling of the detention ponds was assigned to Site Survey (RYAN, E S , DOW CHEMICAL COMPANY, 1967, "STATUS REPORT - HEALTH PHYSICS WASTE DISPOSAL - MAY 1971," INTERNAL LETTER TO J B OWEN, DOW CHEMICAL COMPANY, JUNE 14)

September 1971 - The preliminary proposal for the Liquid Waste Control project was prepared The project would involve various improvements to the existing ponds and drainages to increase their storage volume Specifically, for the A-Series drainage, the Pond A-1 dam would be increased in height and width, and a filter blanket and toe drain would be installed under the embankment on the downstream slope A concrete diversion structure consisting of an asphalt-lined, 42-inch diameter corrugated metal pipe with access wells would be constructed upstream of Pond 1 to enable bypass of the creek around or into both ponds proposed for the A-Series Drainage A new dam would be built east of the existing pond (Pond A-1), and would include a spillway and overflow Discharge from the newly formed pond would be controlled by an outlet The dam would be rip-rapped on the upstream face, and have a filter blanket and toe drain under the downstream slope (DOW CHEMICAL COMPANY, 1971, "PRELIMINARY PROPOSAL, LIQUID WASTE CONTROL, ROCKY FLATS PLANT," SEPTEMBER) *The new pond to be constructed on the A-Series Drainage would be known as Pond A-2*

June 1972 - Preparation for the construction of the diversion pipe and excavation for the new dam on North Walnut Creek (near Pond A-1) began (ALQUIST, J M , DOW CHEMICAL COMPANY, 1972, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," JUNE 19 AND JUNE 26)

August 1972 - Work on the two dams *(Pond A-1 and the new pond, Pond A-2)* on North Walnut Creek continued (ALQUIST, J M , DOW CHEMICAL COMPANY, 1972, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," AUGUST 7, AUGUST 21, AUGUST 28)

September 1972 - The toe drains, strip blankets, and rip-rap were installed on the North Walnut Creek dams The flume structure on North Walnut Creek was completed (ALQUIST, J M , DOW CHEMICAL COMPANY, 1972, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," SEPTEMBER 4, SEPTEMBER 18, SEPTEMBER 25)

October 1972 - The new dams were up to grade and gravel topping was placed (ALQUIST, J M , DOW CHEMICAL COMPANY, 1972, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," OCTOBER 16)

December 1972 - The overflow extension on Pond A-1 was installed (ALQUIST, J M , DOW CHEMICAL COMPANY, 1972, 1973, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," DECEMBER 25, JANUARY 1)

March 1973 - The flow measuring device on North Walnut Creek was installed (ALQUIST, J M , DOW CHEMICAL COMPANY, 1973, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," MARCH 19)

April 1973 - The weir on North Walnut Creek was sealed with clay and rip-rap, and the emergency spillway was graded (MARSCHALL, J.R DOW CHEMICAL COMPANY, 1973, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," APRIL 6, APRIL 27)

December 1973 - A 6 inch diameter PVC pipe was installed between Ponds B-2 and A-2 to enable transfer between the two ponds (COLSTON, B W , U S.AEC, 1973, "ROCKY FLATS EFFLUENT TRANSFER SYSTEM," LETTER TO H D LEENBOUTS, ALO, NOVEMBER 29, COLSTON, B W , U S AEC, 1974, "RELEASE SCHEDULE FOR SOUTH WALNUT CREEK," LETTER TO R D SIEK, CDH, PRIOR TO DECEMBER 21) This was done to minimize radioactivity in effluents from the plant through a new system of transfers The new system was initiated partially through the isolation of Ponds A-2 and B-2 for the storage of process waste *(KELCHNER, B.L , DOW CHEMICAL COMPANY, 1973, "OPERATION OF THE TEMPORARY LAUNDRY WATER DIVERSION AND STORAGE SYSTEM,' INTERNAL LETTER TO H E BOWMAN, DOW CHEMICAL COMPANY, DECEMBER 26)*

February 1974 - Subsequent to transfer of water from Pond B-2 to Pond B-1, a leak was discovered in Pond A-2 (COLSTON, B W , 1974, "RELEASE SCHEDULE FOR SOUTH WALNUT CREEK," LETTER TO R D SIEK, CDH, DATE UNKNOWN) Water was leaking from the plug on the pipe draining Pond A-2 An earthen dam was constructed downstream of Pond A-2, and water was pumped back over the dike of the pond as it entered Pond A-1 was sampled and released to Walnut Creek to allow water from Pond A-2 to be pumped back to Pond A-1 The leak was repaired (ZILLICH, J.A , 1974, "THE POND A-2 LEAK AND RECOMMENDATIONS FOR IMPROVING PONDED PROCESS WASTE WATER ACCOUNTABILITY," MARCH 7)

March 1974 - Construction of Pond A-3 was completed (DOW CHEMICAL COMPANY, 1974, "EARTH WORK PLAN AND DETAILS," AS-BUILT DRAWING OF POND A-3, MARCH 6) Prior to the construction of the existing Pond A-3, another pond was referred to as Pond A-3 This was a temporary pond constructed as an emergency measure in the spring of 1972 or 1973 to prevent the flow of nitrate-laden runoff into North Walnut Creek This was only a temporary fixture until the present Pond A-3 was constructed (HORNBACHER, D D , RETIRED RFP EMPLOYEE, 1992, PERSONAL COMMUNICATION, SEPTEMBER 17)

April 1975 - A plan to reduce the volumes of Ponds B-2 and A-2 included the draining of Pond A-1 to Pond A-3, and using Pond A-1 as a sprinkling area, using "fog" spraying (THOMPSON, M.A , 1975, "PROGRESS REPORT FOR APRIL 1975 - ENVIRONMENTAL SCIENCES AND WASTE CONTROL," INTERNAL LETTER TO BOWMAN, H E., MAY 12) As a result of this plan, natural flow would be diverted to Pond A-3, isolating Pond A-1 from the flow-through system (THOMPSON, M A , 1975, "REDUCTION OF WATER INVENTORY IN POND A-2," LETTER TO E W BEAN, RFAO, ERDA, APRIL 17)

May 1975 - The fog evaporation system at Pond A-2 was placed in service (THOMPSON, M.A , 1975, "PROGRESS REPORT FOR MAY 1975 - ENVIRONMENTAL SCIENCES AND WASTE CONTROL," INTERNAL LETTER TO H E BOWMAN, JUNE 11)

December 1976 - An EJO was submitted for the installation of a gauging station in the vicinity of Walnut Creek and Indiana Street (WEST, J M , ROCKWELL INTERNATIONAL, 1976, "ENVIRONMENTAL ANALYSIS AND CONTROL HIGHLIGHTS - WEEK ENDING DECEMBER 23, 1976," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, DECEMBER 23)

May 1977 - A recommendation was made for the commencement of forced evaporation in Pond A-2 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1977, "ENVIRONMENTAL ANALYSIS AND CONTROL HIGHLIGHTS - WEEK ENDING MAY 13, 1977," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, MAY 13)

April 1978 - Evaporative spraying of water from the Landfill Pond 1 and Pond A-2 began (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING APRIL 14, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, APRIL 14)

October 1978 - Construction of the Walnut Creek gauging station began (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL HIGHLIGHTS - WEEK ENDING OCTOBER 20, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, OCTOBER 20)

March 1979 - Releases from Pond A-3 were interfering with the construction of the dam for Pond A-4 In order for construction to continue, the water was pumped to a point below the new dam site (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING MARCH 23, 1979," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, MARCH 23)

April 1979* - Because of a fire in Building 374, additional storage capacity was needed at the solar ponds (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING APRIL 16, 1979," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, APRIL 16) Water contained in Pond 207B-North, consisting of caustic solution, was released to Pond A-2 (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING APRIL 27, 1979," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, APRIL 27)

May 1979 - Minor erosion at the Walnut Creek gauging station necessitated repair and reseeding (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING MAY 11, 1979," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, MAY 11)

June 1979* - Water containing rhodamine WT dye, which was put in the Building 371 footing drains, was impounded in Ponds A-1, -2, and -3 Pond A-3 was to be sprayed on the hillside Heavy rains allowed the dye to bypass Pond A-3, at a concentration less than the detection limit of 0 5 ppb (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING JUNE 8, 1979," INTERNAL LETTER TO R E YODER, ROCKWELL INTERNATIONAL, JUNE 8)

July 1979 - Additional sprinklers and pipes were installed at Ponds A-1 and A-2 to increase evaporation rates and decrease the volumes stored in these ponds (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING JULY 20, 1979," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, JULY 20)

August 1979 - The Walnut Creek gauging station was repaired and fully operational (BARKER, C J, ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING AUGUST 31, 1979," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, AUGUST 31)

May 1980* - Nitrate concentrations in Pond A-3 were increasing, threatening an NPDES permit violation To prevent a violation, the release at Dam A-4 was closed (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1980, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING MAY 2, 1980," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, MAY 2) By the end of the month, the nitrate concentration in Pond A-3 was reduced to below the NPDES limit by dilution with water from the east landfill pond The water in Pond A-3 was released (ILLSLEY, C T, ROCKWELL INTERNATIONAL, 1980, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING MAY 23, 1980," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, MAY 23)

July 1980 - Pond A-4 was placed in service (HORNBACHER, D D, ROCKWELL INTERNATIONAL, 1980, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING JULY 11, 1980," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, JULY 11)

May 1981* - Analysis of a routine daily bypass sample of A-Series water indicated an elevated nitrate concentration of 120 mg/l The water, which would have normally gone to Pond A-3, was diverted to Pond A-1 It was determined that the high concentration was due to a newly installed overflow pipe for the nitrate collection system discharging directly into the A-Series drainage (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING MAY 15, 1981," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, MAY 15) By the end of the month, the nitrate concentration (of Pond A-1) was down to 8 5 mg/l, and discharge to Pond A-3 began (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING MAY 29, 1981," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, MAY 29)

June 1981* - Increased nitrate levels in Pond A-3, thought to be the result of the heavy rains, were as high as 17 mg/l The water was not discharged until the nitrate concentration was below 10 mg/l On June 12, water containing heavy silted slurry from Building 373 cooling tower cleanout leaked through a dirt dike into Pond A-3 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING JUNE 19, 1981," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, JUNE 19)

August 1981 - Because the nitrate concentration in Pond A-3 was 17 mg/l, compared to the internal guide value of 10 mg/l, the water was not discharged to Pond A-4 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING AUGUST 14, 1981," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, AUGUST 14)

October 1981 - Pond A-3 water contained 13 mg/l nitrates and would not be discharged until the concentration was below 10 mg/l Pond A-1 bypass samples also contained greater than 10 mg/l nitrates (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING OCTOBER 30 1981," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, OCTOBER 30)

November 1981 - It was determined that water upstream of Pond A-3 had elevated nitrate concentrations, up to 25 ppm Flow in North Walnut Creek was diverted to Pond A-1, and the start up of Trench 4, upgradient from the creek, was attempted (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING NOVEMBER 6, 1981," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, NOVEMBER 6) Later in the month, when the high nitrate concentration persisted in Pond A-3, Trenches 2 and 4 were operating, as well as diversion of the water to Pond A-1 Also, the new sump system was placed in service Plans began to transfer the Pond A-3 water to the solar ponds for spray irrigation Seepage from the solar ponds, evident along the ditch on the south side of a new patrol road, was not collected by the new sump system, and could flow into North Walnut Creek (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING NOVEMBER 20, 1981," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, NOVEMBER 20) By the end of the month, when the nitrate problem still persisted, Pond 207B-South was drained to Pond 207A and was available to receive water from Pond A-3 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING NOVEMBER 30, 1981," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, NOVEMBER 30)

December 1981 - Pond A-1 bypass water still contained too much nitrate and was diverted to Pond A-1 Pond A-3 still also had elevated nitrate Surface drainage in the south portion of the PSZ contained 400 mg/l nitrate and also had to be collected, rather than flowing to Walnut Creek (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING DECEMBER 4, 1981," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, DECEMBER 4) A pipeline from Pond A-3 to the nitrate sump was installed to drain the water from the pond (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING DECEMBER 11, 1981," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, DECEMBER 11) A pool of standing water north of Pond 207C, near the PSZ patrol road,

contained approximately 1,900 mg/l nitrates A collector trench for the area was requested Flow from the area was diverted to Pond A-1 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING DECEMBER 11, 1981," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, DECEMBER 11)

March 1982 - Pond A-3 water continued to be high in nitrates Pumping of the water to the solar ponds was resumed (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1982, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING MARCH 12, 1982," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, MARCH 12)

April 1989* - Atrazine and simazine, herbicides, were detected in Pond A-4 Granular activated carbon (dual units) was used to remove the chemicals from water in the pond prior to discharge (EG&G ROCKY FLATS, 1990, "ROCKY FLATS PLANT SITE ENVIRONMENTAL REPORT, JANUARY THROUGH DECEMBER 1989," DATE UNKNOWN)

September 1989 - Leakage from a pump went into Pond A-4 (MCMENUS, F P AND D CHOJNACKI, ROCKWELL INTERNATIONAL, 1989 "PUMP LEAK," INTERNAL MEMORANDUM, SEPTEMBER 12)

1990 - Diversion of water from Rocky Flats around Standley Lake and Great Western Reservoir was initiated Walnut Creek water was diverted into the Broomfield diversion ditch, bypassing Great Western Reservoir (EG&G ROCKY FLATS, 1990, "ROCKY FLATS PLANT SITE ENVIRONMENTAL REPORT, JANUARY THROUGH DECEMBER 1990,' DATE UNKNOWN) Pipelines were installed to allow transfer of water from Pond B-5 to Pond A-4 and from Pond C-2 to Pond A-4 (U.S DOE, 1992, "HISTORICAL RELEASE REPORT FOR THE ROCKY FLATS PLANT," JUNE)

March 1990 - The dual carbon treatment units installed in 1989 on Pond A-4 were replaced by a larger Model 10 unit (MENDE, E , EG&G, 1992, PERSONAL COMMUNICATION, SEPTEMBER 17)

May 1992* - A leak of potentially contaminated water occurred in Building 371 This leak could have reached the A-Series drainage if cracks were present in the floor of the building through four feet of concrete to a footing drain Temporary dikes were built around the end of the footing drain, and the water in the drainage was diverted to Pond A-1 pending conclusive determination of whether or not water in the footing drain was contaminated The water in the footing drain was found to be uncontaminated (YASHAN, D , EG&G, 1992, TELEPHONE CONVERSATION, AUGUST 28)

B-SERIES DRAINAGE PONDS TIMELINE

Prior to June 1953 - Pond 3, later re-designated Pond B-2, was built, or it was a pre-existing pond that was incorporated into the RFP drainage system

June 1953 - Two retaining ponds were under construction east of Building 995 The estimated capacities of the ponds were 1 6 million and 2 million gallons (RYAN, E S , DOW CHEMICAL COMPANY, 1953, "PROGRESS REPORT - WASTE DISPOSAL UNIT - JUNE 1953," INTERNAL LETTER TO J EPP, DOW CHEMICAL COMPANY, JULY 1)

July 1953 - A large quantity of oil was received at Building 995 and sewage bypassed the sewage treatment plant for a period of time (VOIGHT, A H , DOW CHEMICAL COMPANY, "BACTERIOLOGICAL SEWAGE REPORT - 41 GENERAL LABORATORY," DATE UNKNOWN)

August 1953 - The two new ponds east of Building 995 were complete and in service (RYAN, E S , DOW CHEMICAL COMPANY, 1953, "PROGRESS REPORT - WASTE DISPOSAL UNIT - JULY 1953," INTERNAL LETTER TO J EPP, DOW CHEMICAL COMPANY, AUGUST 3) *These new ponds were initially designated Ponds 4 and 5 and were re-designated in the early 1970s to Ponds B-3 and B-4*

December 1953 - Pipes were to be installed at the outlets of each of the ponds in an attempt to achieve more complete mixing of the water The pipes would allow only the lower level of the pond to be discharged Plans were being made for the installation of a proportional sampler on the lower retention pond The sampler would provide a better indication of the activity of waters being released to the south fork of Walnut Creek (RYAN, E S , DOW CHEMICAL COMPANY, 1954, "PROGRESS REPORT - WASTE DISPOSAL UNIT - DECEMBER 1953," INTERNAL LETTER TO J EPP, DOW CHEMICAL COMPANY, JANUARY 7)

March 1954 - High winds during the previous month caused damage to the dikes of the four ponds (believed to be Ponds 1, 3, 4, and 5) Rocks were placed along the dike faces to repair the dikes and prevent recurrence of the problem (RYAN, E S , DOW CHEMICAL COMPANY, 1954, "PROGRESS REPORT - WASTE DISPOSAL UNIT - MARCH 1954," INTERNAL LETTER TO J EPP, DOW CHEMICAL COMPANY, APRIL 2)

August 1954 - Roads were being constructed to the Walnut Creek Pond and to the three retention ponds Construction of concrete retention walls and spillways began around the discharge pipes of the three retention ponds to prevent damage during high winds (RYAN, E S , DOW CHEMICAL COMPANY, 1954, "PROGRESS REPORT FOR THE MONTH OF AUGUST 1954 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, SEPTEMBER 3)

September 1954 - Construction of the roads and concrete wall was completed (RYAN, E S , DOW CHEMICAL COMPANY, 1954, "PROGRESS REPORT FOR THE MONTH OF SEPTEMBER 1954 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, OCTOBER 6)

November 1954 - A Parshall flume was used to measure flow rates of effluent from the plant Flow rates ranged from 1,500 gph to 4,500 gph A request was prepared by Waste Disposal, to be submitted to Engineering the following month, for a recorder-integrator, motorized pump, and housing facility (RYAN, E S , DOW CHEMICAL COMPANY, 1954, "PROGRESS REPORT FOR THE MONTH OF NOVEMBER 1954 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, DECEMBER 2)

March 1955 - High winds caused damage to the dikes of the three ponds on the south fork of Walnut Creek (Ponds 3, 4, and 5) Rock fills were to be placed at the dikes for repair and prevention of further damage (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF MARCH 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, APRIL 4)

April 1955 - Ongoing concrete work on Ponds 3, 4, and 5 was finished (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF APRIL 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, MAY 2)

May 1955 - Rains caused damage to the Pond 5 dike Runoff from the pond filled the borrow ditch south of the access road and the turnaround with silt, allowing the water to come back into the dike, cutting out a large section of the west face of the dike To prevent complete destruction of the dike, a channel was cut through the road at the top of the dike to allow the water to flow into the pond Fill on the sides of the Parshall flume at Pond 5 was also washed away by the high water flow The dikes of Ponds 3 and 4 received minor damage from the heavy rains (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF MAY 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JUNE 1)

June 1955 - The dike of Pond 5 was repaired A small culvert was installed under the road at the location where the emergency channel had been cut to prevent similar problems due to heavy rains Rock facing of the west dike of Pond 5 began (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF JUNE 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, JULY 1)

July 1955 - Rock facing of the dikes of Ponds 3, 4, and 5 was completed Another culvert was installed under the road at Pond 5 to divert runoff to Pond 3 (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF JULY 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, AUGUST 1)

August 1955 - A continuous sampler was installed at Pond 5 Some problems with the sampler arose due to sand plugging the system (RYAN, E.S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF AUGUST 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, SEPTEMBER 1)

September 1955 - As an indirect result of a break in a process waste line from Building 774 and subsequent repairs, 2,700 gallons of laundry waste containing greater than 8,500 dpm/l were released to the sanitary sewer (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF AUGUST 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, OCTOBER 4)

February 1956 - The housing structure, metering device, and proportional sampler were approved for Pond 5 The unit would be referred to as Facility 207 upon completion (RYAN, E S , DOW CHEMICAL COMPANY, 1956, "HISTORY REPORT FOR THE MONTH OF FEBRUARY 1956 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, MARCH 2)

April 1956 - Construction of Facility 207 began Silt was removed and the drainage ditches were deepened at Ponds 3, 4, and 5 to prevent rain damage (RYAN, E S , DOW CHEMICAL COMPANY, 1956, "HISTORY REPORT FOR THE MONTH OF APRIL 1956 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, MAY 1)

June 1956 - Power was supplied, Parshall flumes were set in place, and cement work and erection of the house was completed for Facility 207 Installation of instruments and equipment was being conducted (RYAN,

E S , DOW CHEMICAL COMPANY, 1956, "HISTORY REPORT FOR THE MONTH OF APRIL 1956 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JUNE 29)

July 1956 - Facility 207 was complete It was stated that the concrete east and west of the facility would have to be widened to contain water during high flows (RYAN, E S , DOW CHEMICAL COMPANY, 1956, "HISTORY REPORT FOR THE MONTH OF JULY 1956 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, AUGUST 3)

August 1956 - Facility 207 was placed in service A sample splitter was installed on the discharge side of the pump (RYAN, E S , DOW CHEMICAL COMPANY, 1956, "HISTORY REPORT FOR THE MONTH OF AUGUST 1956 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, SEPTEMBER 5)

September 1956 - Heating cables were installed at Facility 207 on the sampling tube, pump, and sample drum to enable sampling during winter months (RYAN, E S , DOW CHEMICAL COMPANY, 1956, "HISTORY REPORT FOR THE MONTH OF SEPTEMBER 1956 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, OCTOBER 2)

October 1956 - A heating element was installed at Facility 207 over the still well, to further prepare the system for winter use (RYAN, E S , DOW CHEMICAL COMPANY, 1956, "HISTORY FOR OCTOBER 1956 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, NOVEMBER 5)

May 1957 - Because of heavy rains, a diversion channel was formed at Pond 5 to help handle the high flow rates The ground around the Facility 207 metering station was cut into by the rainwater (RYAN, E S , DOW CHEMICAL COMPANY, 1957, "HISTORY REPORT FOR THE MONTH OF MAY 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JUNE 6)

June 1958 - A work order for installation of a third diversion pipe and concrete work at the Facility 207 metering station at Pond 5 was issued Two culverts, made from 55-gallon drums, were installed at Pond 5 as a temporary substitute for a new diversion channel (RYAN, E S , DOW CHEMICAL COMPANY, 1958, "HISTORY REPORT - JUNE 1958 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JULY 2)

December 1958 - A section of culvert to be attached to the discharge pipe of the gate assembly was received The gate assembly was located on the east side of the dike of Pond 5 (RYAN, E S , DOW CHEMICAL COMPANY, 1959, "HISTORY REPORT - WASTE DISPOSAL CO-ORDINATION GROUP - DECEMBER 1958," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JANUARY 19)

January 1959 - Activity levels in the "three detention ponds through which the effluent of Building 95 and the off-site releases from Building 74 pass" were increased due to a release of raw sewage containing contaminated coolant (RYAN, E S , DOW CHEMICAL COMPANY, 1959, "HISTORY REPORT - WASTE DISPOSAL CO-ORDINATION GROUP - JANUARY 1959," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, FEBRUARY 4)

May 1962 - Raw sewage being released from the overloaded WWTP caused Ponds 3, 4, and 5 to become septic In response, approximately 175 pounds of H T H. were applied to the ponds (RYAN, E S , DOW CHEMICAL COMPANY, 1962, "HISTORY REPORT - PROCESS WASTE DISPOSAL GROUP - MAY 1962," INTERNAL LETTER TO G.E WHITE, DOW CHEMICAL COMPANY, JUNE 12)

June 1962 - The septic condition of Ponds 3, 4, and 5 persisted due to releases of partially treated sewage (RYAN, E S , DOW CHEMICAL COMPANY, 1962, "HISTORY REPORT - PROCESS WASTE DISPOSAL GROUP - JUNE 1962," INTERNAL LETTER TO G E WHITE, DOW CHEMICAL COMPANY, JULY 26)

September 1962 - The plans made for the construction of a new pond west of Pond 3 to prevent the release of untreated sewage were too expensive, so alternative methods of containing water while Pond 3 could be deepened were implemented A temporary dike and by-pass channel were constructed Cleaning of Pond 3 began with syphoning of the water The syphons filled with clay silt, so a bucket and dragline was used at the west end of the pond with limited success (RYAN, E S , DOW CHEMICAL COMPANY, 1962, "HISTORY REPORT - PROCESS WASTE DISPOSAL GROUP - SEPTEMBER 1962," INTERNAL LETTER TO G E WHITE, DOW CHEMICAL COMPANY, OCTOBER 25)

October 1962 - Because of the limited success of cleaning Pond 3 with a drag line, it was decided to modify the outlet of the pond instead, raising the level of the pond The temporary dike would be made permanent These modifications to the system would allow for greater detention time, and solids would settle in the new "pond" formed by the new dike (RYAN, E S , DOW CHEMICAL COMPANY, 1962, "HISTORY REPORT - PROCESS WASTE DISPOSAL GROUP - OCTOBER 1962," INTERNAL LETTER TO G E WHITE, DOW CHEMICAL COMPANY, NOVEMBER 15)

November 1962 - Modifications to Pond 3 and the new Pond 2 (re-designated in the early 1970s as Pond B-1) had progressed far enough to allow for the pond system to return to service (RYAN, E S , DOW CHEMICAL COMPANY, 1962, "HISTORY REPORT - PROCESS WASTE DISPOSAL GROUP - NOVEMBER 1962," INTERNAL LETTER TO G E WHITE, DOW CHEMICAL COMPANY, DECEMBER 13)

December 1962 - Rocks were placed on the dikes of Pond 2 and 3 Partially treated sewage was again released to the ponds and the new pond arrangement helped to minimize its affects (RYAN, E S , DOW CHEMICAL COMPANY, 1963, "HISTORY REPORT - PROCESS WASTE DISPOSAL GROUP - DECEMBER 1962," INTERNAL LETTER TO G E WHITE, DOW CHEMICAL COMPANY, JANUARY 11)

June 1963 - A "considerable quantity" of a chromium-containing solution was released to the sanitary sewer, resulting in effluent chromium values of 0 6 ppm (VOIGHT, A H , 1963, "CHROMIUM DISPOSAL VIA BUILDING 95," INTERNAL LETTER TO J.A GEER, JUNE 27)

May 1964 - Use of an acid sour by the laundries caused the fluoride level in effluent from Pond 5 to increase The acid sour was to be replaced by a fluoride-free acid sour to prevent this from re-occurring (RYAN, E S , DOW CHEMICAL COMPANY, 1964, "HISTORY REPORT - PROCESS WASTE DISPOSAL GROUP - MAY 1964," INTERNAL LETTER TO G E WHITE, DOW CHEMICAL COMPANY, JUNE 17)

March 1965 - Because of high nitrate levels in Pond 5, releases of treated waste from Building 774 were made to the sanitary system instead of to the offsite stream (RYAN, E S , DOW CHEMICAL COMPANY, 1965, "STATUS REPORT - WASTE DISPOSAL COORDINATION GROUP - MARCH 1965," INTERNAL LETTER TO E A PUTZIER, DOW CHEMICAL COMPANY, APRIL 12)

April 1965 - A drainage ditch "on the mesa south of the detention ponds" was relocated to prevent its runoff from cutting into the dike of the lower pond, "near the east boundary of the plant" (RYAN, E S , DOW CHEMICAL COMPANY, 1965, "STATUS REPORT - WASTE DISPOSAL COORDINATION GROUP - APRIL 1965," INTERNAL LETTER TO E.A PUTZIER, DOW CHEMICAL COMPANY, MAY 11)

November 1966 - The nitrate level in Pond 5 rose to 13 times the standard due to a release from a tank of high nitrate liquid waste from Building 774 Lockout procedures were reviewed in hopes to prevent a

recurrence of such an event (RYAN, E S , DOW CHEMICAL COMPANY, 1966, "STATUS REPORT - WASTE DISPOSAL COORDINATION - NOVEMBER 1966," INTERNAL LETTER TO E.A PUTZIER, DOW CHEMICAL COMPANY, DECEMBER 9)

December 1966 - Low nitrate releases from Building 74 were held in the asphalt-lined solar pond so that it could be diluted with Building 95 effluent in an attempt to lower the nitrate level of Pond 5 effluent (RYAN, E S , DOW CHEMICAL COMPANY, 1967, "STATUS REPORT - WASTE DISPOSAL COORDINATION - DECEMBER 1966," INTERNAL LETTER TO E A PUTZIER, DOW CHEMICAL COMPANY, JANUARY 10)

April 1967 - Heavy rains and subsequent runoff damaged the dike of one of the retention ponds (specific pond not identified) The dike was repaired and an overflow culvert was installed at the north end of the dike (RYAN, E S , DOW CHEMICAL COMPANY, 1967, "STATUS REPORT - WASTE DISPOSAL COORDINATION - APRIL 1967," INTERNAL LETTER TO E.A PUTZIER, DOW CHEMICAL COMPANY, MAY 9)

Based on annual reports, the use of alpha-numeric designations for the ponds, as opposed to the strictly numeric designations, began in approximately 1971

May 1971 - Sampling of the detention ponds was assigned to Site Survey (RYAN, E S , DOW CHEMICAL COMPANY, 1967, "STATUS REPORT - HEALTH PHYSICS WASTE DISPOSAL - MAY 1971," INTERNAL LETTER TO J B OWEN, DOW CHEMICAL COMPANY, JUNE 14)

September 1971 - The preliminary proposal for the Liquid Waste Control project was prepared The project would involve various improvements to the existing ponds and drainages to increase their storage volume Specifically, for the B-Series drainage, the dams of Ponds 2 and 3 would be raised and widened and new overflow and emergency outlets would be constructed The upstream faces of the ponds would be rip-rapped and a filter blanket and toe drain would be installed under the downstream embankments A concrete diversion structure with control gates would also be constructed upstream of Pond 2, allowing by-pass of the creek Fill would be added to the dams of Ponds 4 and 5 for stabilization, and the emergency spillways would be regraded Overflows would be built on the ponds and filter blankets and toe drains would be installed under the new fill on the downstream slope The widening of the dam at Pond 5 would necessitate moving Building 994, the effluent measuring station (DOW CHEMICAL COMPANY, 1971, "PRELIMINARY PROPOSAL, LIQUID WASTE CONTROL, ROCKY FLATS PLANT," SEPTEMBER)

March 1972 - An inadvertent release of liquid waste from Building 774 occurred, resulting in increased plutonium activity levels in Ponds 2, 3, 4, and 5 The concentrations of nitric acid vapors in the effluent stream from Building 883 were reduced as a result of adjustments made to the Building 883 effluent scrubber (HAMMOND, S E , DOW CHEMICAL COMPANY, 1972, "STATUS REPORT - MARCH 1972 - INDUSTRIAL HYGIENE & HEALTH PHYSICS RESEARCH," INTERNAL LETTER TO J R SEED, MARCH 29)

July 1972 - "Stripping and excavation" at South Walnut Creek began in preparation for construction of the new diversion structure (ALQUIST, J M , DOW CHEMICAL COMPANY, 1972, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," JUNE 19 AND JULY 10 AND JULY 31)

September 1972 - The toe drains, strip blankets, and rip-rap were installed on South Walnut Creek Slide gates were placed on South Walnut Creek (upstream of Pond 2) (ALQUIST, J M , DOW CHEMICAL COMPANY, 1972, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," SEPTEMBER 4, SEPTEMBER 18, SEPTEMBER 25)

October 1972 - The new dams were up to grade and gravel topping was placed (ALQUIST, J M , DOW CHEMICAL COMPANY, 1972, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," OCTOBER 16)

December 1972 - Work on the Pond 5 dam was taking place (ALQUIST, J M, DOW CHEMICAL COMPANY, 1972, 1973, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," DECEMBER 25, JANUARY 1)

April 1973 - Liquid waste containing tritium was released from Building 779 to the sanitary sewer system and subsequently was released to Walnut Creek (U S EPA, 1974, "INVESTIGATIVE REPORT OF THE 1973 TRITIUM RELEASE AT THE ROCKY FLATS PLANT IN GOLDEN, COLORADO," JULY)

May 1973 - Another tritium release occurred, see above description

June 1973 - Work on the Pond 5 dam was taking place (MARSCHALL, J R, DOW CHEMICAL COMPANY, 1973, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," JUNE 8, JUNE 22)

November 1973 - Contaminated soil was removed from the Building 995 outfall stream bed (AUTHOR UNKNOWN, DOW CHEMICAL COMPANY, 1973, "HEALTH PHYSICS STATUS REPORT FOR BUILDINGS 440, 444, 865, 881, 883, 886, 889 AND 991, ALSO SITE SURVEY - NOVEMBER 1973," INTERNAL LETTER TO E A PUTZIER, DECEMBER 3)

December 1973 - Beginning this month, all process waste was to be held in Pond B-2 (COLSTON, B W, 1974, "RELEASE SCHEDULE FOR SOUTH WALNUT CREEK," LETTER TO R D SIEK, CDH, DATE UNKNOWN) A 6-inch diameter PVC pipe was installed between Ponds B-2 and A-2 to enable transfer between the two ponds (COLSTON, B W, U S.AEC, 1973, "ROCKY FLATS EFFLUENT TRANSFER SYSTEM," LETTER TO H D LEENBOUTS, ALO, NOVEMBER 29, COLSTON, B W, U S.AEC, 1974, "RELEASE SCHEDULE FOR SOUTH WALNUT CREEK," LETTER TO R D SIEK, CDH, PRIOR TO DECEMBER 21) This was done to minimize radioactivity in effluents from the plant through a new system of transfers The new transfer system was partially initiated through the isolation of Ponds A-2 and B-2 (KELCHNER, B L, DOW CHEMICAL COMPANY, 1973, "OPERATION OF THE TEMPORARY LAUNDRY WATER DIVERSION AND STORAGE SYSTEM," INTERNAL LETTER TO H E BOWMAN, DOW CHEMICAL COMPANY, DECEMBER 26)

December 1974 - *(This date is estimated)* During installation of a process waste line between Buildings 881 and 774, water from the excavation was discharged to South Walnut Creek, near Building 708 (REES, T F, 1974, "ANALYSES REPORT," ANALYSIS OF "707 DITCH WATER," TO G WERKEMA, DECEMBER 20)

March 1975 - A violation of the visible foam standard of the EPA discharge permit occurred because of high surfactant concentrations Influent surfactant levels were up to 3 9 ppm, resulting in effluent concentrations of up to 0 9 ppm Dilution and retention of the water in the B-Series ponds reduced the concentration to 0 06 ppm prior to discharge (THOMPSON, M A, 1975, "PROGRESS REPORT FOR MARCH 1975 - ENVIRONMENTAL SCIENCES AND WASTE CONTROL," INTERNAL LETTER TO H E BOWMAN, APRIL 10)

April 1975 - Pond B-3 ran over frequently because of a plugged outlet pipe preventing the pond to drain completely before Pond B-1 water was transferred to it A leak in the waste transfer line to Pond B-2 was discovered The pipeline was replaced the following month and contamination at the site was considered minimal Eighty-six thousand gallons of water were transferred by truck from the Building 774 footing drain to a manhole for retention in Pond B-2 (THOMPSON, M.A, 1975, "PROGRESS REPORT FOR APRIL 1975 - ENVIRONMENTAL SCIENCES AND WASTE CONTROL," INTERNAL LETTER TO BOWMAN, H E, MAY 12)

May 1975 - Heavy precipitation caused Pond B-3 to run over twice, washing out part of the dam by the spillway (THOMPSON, M.A, 1975, "PROGRESS REPORT FOR MAY 1975 - ENVIRONMENTAL SCIENCES AND WASTE CONTROL," INTERNAL LETTER TO H E BOWMAN, JUNE 11)

December 1976 - An EJO was submitted for the installation of a gauging station in the vicinity of Walnut Creek and Indiana Street (WEST, J M , ROCKWELL INTERNATIONAL, 1976, "ENVIRONMENTAL ANALYSIS AND CONTROL HIGHLIGHTS - WEEK ENDING DECEMBER 23, 1976," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, DECEMBER 23).

August 1977* - The level of iodine-131 in Pond B-3 was 20 pCi/l The city of Broomfield requested that the water not be released into Great Western Reservoir and the request was granted (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1977, "ENVIRONMENTAL ANALYSIS AND CONTROL HIGHLIGHTS - WEEK ENDING AUGUST 26, 1977," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, AUGUST 26)

September 1977 - A procedure to give control of discharges from the A- and B-Series Ponds to the Environmental Analysis and Control group was prepared Water from the B-Series ponds were being sprayed on the north hillside, rather than being discharged, because of the high iodine-131 level (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1977, "ENVIRONMENTAL ANALYSIS AND CONTROL HIGHLIGHTS - WEEK ENDING SEPTEMBER 9, 1977," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, SEPTEMBER 9) By the end of the month, the iodine concentration in the Building 995 effluent was down to 1 pCi/l Apparently, the elevated levels had been due to an employee receiving iodine treatment Normal operations concerning the effluent were resumed (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1977, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING SEPTEMBER 30, 1977," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, SEPTEMBER 30)

February 1978* - Because of an accidental release of unneutralized demineralization waste from the steam plant into the sanitary waste system, the NPDES Permit was violated for total suspended solids, pH, and BOD_5 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING FEBRUARY 10 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, FEBRUARY 10) Pond B-3 contained alpha activity ranging from 50 to 60 pCi/l The pond water was sprayed, rather than released (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING FEBRUARY 17, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, FEBRUARY 17) It was determined that previous elevated fluoride concentrations were due to the use of a concrete floor hardener and sealer, Sanıseal, in Building 371/374 Water in Pond B-3 still contained approximately 30 pCi/l alpha activity The water was released, because it was below 40 pCi/l Beryllium was not present in the water (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING FEBRUARY 24, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, FEBRUARY 24) Another NPDES violation for BOD_5 occurred at the end of the month because of iron in backwash from flushing of polishers in the steam plant Because of this second incident, the monthly average for BOD_5, 15 5 mg/l, would exceed the limit of 10 mg/l, resulting in an additional NPDES violation (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING MARCH 3, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, MARCH 3)

March 1978* - Water from Pond B-3 had anomalous beta activity and was sprayed instead of released (ILLSLEY, C T , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING MARCH 10, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, MARCH 10)

July 1978* - Pond B-3 water contained 1,813 pCi/l tritium The water was sprayed on the hillside to reduce the volume enough for transfer to Pond B-1 (WEST, J M , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING JULY 7, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, JULY 7)

October 1978 - Construction of the Walnut Creek gauging station began (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL HIGHLIGHTS - WEEK ENDING OCTOBER 20, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, OCTOBER 20)

December 1978* - Runoff from a sodium hydroxide spill was captured and temporarily contained in Pond B-1 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL HIGHLIGHTS - WEEK ENDING DECEMBER 8, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, DECEMBER 8) Alum was added to Pond B-1 to reduce the pH The caustic was transferred to Pond 207B-North for further containment (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL HIGHLIGHTS - WEEK ENDING DECEMBER 15, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, DECEMBER 15)

March 1979 - Releases from Pond B-4 were interfering with the construction of dams for Pond B-5 In order for construction to continue, the water was pumped to a point below the new dam site (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING MARCH 23, 1979," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, MARCH 23)

April 1979* - Because of a fire in Building 374, additional storage capacity was needed at the solar ponds It was stated that, if necessary, water in Pond 207B-North, which consisted of the spilled caustic solution, could be transferred to Pond B-2 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING APRIL 16, 1979," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, APRIL 16) Water contained in Pond 207B-North, consisting of caustic solution, was released to Pond B-2 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING APRIL 27, 1979," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, APRIL 27)

August 1979 - Gross beta concentration of the Building 995 effluent was 5,200 pCi/l, and the iodine-131 concentration was 3.7×10^3 pCi/l It was determined that the high levels were due to an employee receiving medical treatment involving the iodine (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING AUGUST 10, 1979," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, AUGUST 10) Following discussions with and instruction to the employee, the high concentrations continued, indicating that there was possibly another employee receiving the same type of treatment. The water was not released offsite (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING AUGUST 17, 1979," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, AUGUST 17) The presence of the iodine-131 in the water obviated the need for spraying of Pond B-3 water on the north side of the east access road (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING AUGUST 24, 1979," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, AUGUST 24)

September 1979* - Runoff from a steam condensate line break near Building 707 began going to Pond B-4 and was diverted to Pond B-1 The valve at Pond B-5 was shut to prevent discharge of the water (CRITES, T R , ROCKWELL INTERNATIONAL, 1979, "ENVIRONMENTAL SCIENCES WEEKLY HIGHLIGHTS - WEEK ENDING SEPTEMBER 28, 1979," INTERNAL LETTER TO R E YODER, ROCKWELL INTERNATIONAL, SEPTEMBER 28)

July 1980 - Pond B-5 was placed in service (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1980, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING JULY 11, 1980," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, JULY 11)

November 1980 - The first discharge from Pond B-5 was made (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1980, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING NOVEMBER 7, 1980," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, NOVEMBER 7) A yellow material was dumped into the sanitary sewer system The treated water was impounded in Pond B-1 until analysis of the material was complete The dirt dredged from the Walnut Creek channel at the gauging station was spread out (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1980, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING NOVEMBER 26, 1980," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, NOVEMBER 26)

December 1980 - Approximately 155 gallons of 25% antifreeze released from a chiller in Building 708 The solution was contained in Pond B-1 and the dam at Pond B-5 was closed (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1980, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING DECEMBER 5, 1980," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, DECEMBER 5) It was determined that none of the antifreeze had reached Pond B-4 (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1980, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING DECEMBER 12, 1980," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, DECEMBER 12)

March 1981 - As a result of the STP clarifier being drained for repairs, some untreated sewage was released to Pond B-3 Analysis of the water indicated 79 mg/l suspended solids, 47 mg/l COD, and 43 mg/l BOD_5 No discharges from the pond were made (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING APRIL 3, 1981," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, APRIL 3)

November 1981 - Future cleanout of Pond B-5 sediment was complicated due to the walls of the pond failing, and concern over the entire hill sliding into the ponds (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1981, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING NOVEMBER 6, 1981," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, NOVEMBER 6)

March 1982 - Water was pumped over the Pond B-5 dam, in preparation for sediment removal (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1982, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING MARCH 12, 1982," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, MARCH 12) Discharge of water from Pond B-5 was completed mid-month and higher standpipes were provided (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1982, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING MARCH 19, 1982," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, MARCH 19)

April 1983* - Subsequent to a spill of process liquid waste into a ditch near the intersection of 8th street and Sage Street, the runoff was diverted to Pond B-1 Oil from the spill was visible in Ponds B-1, B-4, and B-5 Analyses were taken and the water was not discharged offsite (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1983, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING APRIL 8, 1983," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, APRIL 8)

February 1989* - A release of chromic acid from Building 444 went through the sewage treatment plant and into Pond B-3 Water from Pond B-3 was spray irrigated Runoff from spray irrigating at the North Spray Field may have reached Ponds A-3 and A-4, but probably flowed to Pond B-5 Runoff from spray irrigation at the South Spray Field would have flowed to Ponds B-5 and C-2 (ROCKWELL INTERNATIONAL, 1989, "REPORT OF CHROMIC ACID LEAK FROM BUILDING 444 ACID RINSE WASTE TANK SYSTEM, ROCKY FLATS PLANT, GOLDEN, COLORADO," MARCH 29) Water from Pond B-3 was eventually released to Pond B-5 (U S DOE, 1989, "RCRA CONTINGENCY PLAN IMPLEMENTATION REPORT," NO 89-001, MARCH 8)

April 1989* - Atrazine and simazine, herbicides, were detected in Pond B-5 Granular activated carbon (dual units) was used to remove the chemicals from water in the ponds prior to discharge (EG&G ROCKY FLATS, 1990, "ROCKY FLATS PLANT SITE ENVIRONMENTAL REPORT, JANUARY THROUGH DECEMBER 1989," DATE UNKNOWN)

1990 - Diversion of water from Rocky Flats around Standley Lake and Great Western Reservoir was initiated Walnut Creek water was diverted into the Broomfield diversion ditch, bypassing Great Western Reservoir (EG&G ROCKY FLATS, 1990, "ROCKY FLATS PLANT SITE ENVIRONMENTAL REPORT, JANUARY THROUGH DECEMBER 1990," DATE UNKNOWN) A pipeline was installed to allow transfer of water from Pond B-5 to Pond A-4 (U.S DOE, 1992, "HISTORICAL RELEASE REPORT FOR THE ROCKY FLATS PLANT," JUNE)

March 1990 - A small amount of slurried carbon overfilled a tank and reached Walnut Creek at the foot of the dam of Pond B-5 (HOBBS, F D , 1990, "CRITIQUE MEETING MINUTES," UNPLANNED EVENT 90-0329, MARCH 21) The dual carbon treatment units installed at Pond B-5 were replaced with a larger Model 10 activated carbon unit (MENDE, E , EG&G, 1992, PERSONAL COMMUNICATION, SEPTEMBER 17)

February 1991* - On the first day of the month, one of the sewage sludge drying beds overflowed and a small quantity of sanitary sewage sludge reached South Walnut Creek Water from the creek was diverted to Pond B-1, but no elevated levels of contaminants were identified (YASHAN, D , EG&G, 1992, TELEPHONE CONVERSATION, AUGUST 28)

C-SERIES PONDS TIMELINE

January 1955 - Two new ponds were under construction near Building 881 to supply retention for the Building 881 cooling tower condensate pipe effluent and the WTP backwash discharge (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF JANUARY 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, FEBRUARY 2) The two new ponds would be located on Woman Creek, with a small pond below the sanitary sewer overflow pipe, and a larger one southeast of Building 881 where the road crossed Woman Creek (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF FEBRUARY 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, MARCH 2) *These ponds were designated Ponds 6 and 9 Pond 6 was the pond south of the water treatment plant and was actually on a drainage leading to Woman Creek It is believed that Pond 6 was abandoned in place in the early 1960s This pond no longer exists Pond 9 was across Woman Creek southeast of Building 881 and was re-designated Pond C-1 in the early 1970s*

March 1955 - Construction of the four retention ponds on Woman Creek was completed An overflow pipe was installed on the "large pond" and the first discharge from the pond occurred (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF MARCH 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, APRIL 4) *These four ponds were designated Ponds 6, 7, 8, and 9 Pond 6, 7, and 8 were on drainages leading to Woman Creek and Pond 9 was on Woman Creek Pond 9 collected the flow from Ponds 6, 7, and 8 Of these four pond, only Pond 9 was in routine use in the early 1970s, when it was re-designated Pond C-1*

May 1955 - Because of heavy rains, it was necessary to cut a channel on the north end of the dike of Pond 9 to prevent complete damage of the dike Pond 9 did not have an overflow spillway at this time (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF MAY 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JUNE 1)

June 1955 - The channel of Pond 9, which had been cut to minimize damage during the rains, was deepened and became the permanent overflow spillway (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF JUNE 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, JULY 1)

September 1955 - A break in a process waste line to Building 774 and subsequent repairs resulted in the release of 2,700 gallons of steam condensate from Building 881 were released to Pond 7 (RYAN, E S , DOW CHEMICAL COMPANY, 1955, "HISTORY REPORT FOR THE MONTH OF AUGUST 1955 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, OCTOBER 4)

August 1956 - Pond 9 was empty and the inlet and west end of the pond were cleaned out with a dragline (RYAN, E S , DOW CHEMICAL COMPANY, 1956, "HISTORY REPORT FOR THE MONTH OF AUGUST 1956 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, SEPTEMBER 5)

April 1957 - The spillway of Pond 9, which was not concreted, was damaged by the "cutting action of the moving water" from heavy runoff flow (RYAN, E S , DOW CHEMICAL COMPANY, 1957, "HISTORY REPORT FOR THE MONTH OF APRIL 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, MAY 3)

May 1957 - Heavy rains resulted in further damage to the spillways at Pond 9 (RYAN, E S , DOW CHEMICAL COMPANY, 1957, "HISTORY REPORT FOR THE MONTH OF MAY 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, JUNE 6)

October 1957 - The cut in the north end of the dike of Pond 9, which was caused by heavy rains, was filled in (RYAN, E S , DOW CHEMICAL COMPANY, 1957, "HISTORY REPORT - OCTOBER 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, NOVEMBER 5)

November 1957 - Repair of the overflow channel of Pond 9 began The reformed channel of Pond 9 was lined with rocks (RYAN, E S , DOW CHEMICAL COMPANY, 1957, "HISTORY REPORT - NOVEMBER 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L C FARRELL, DOW CHEMICAL COMPANY, DECEMBER 5)

December 1957 - Repairs on Pond 9 were essentially finished Lining of the channel from Pond 9 remained to be done (RYAN, E S , DOW CHEMICAL COMPANY, 1958, "HISTORY REPORT - DECEMBER 1957 - WASTE DISPOSAL CO-ORDINATION GROUP," INTERNAL LETTER TO L.C FARRELL, DOW CHEMICAL COMPANY, JANUARY 10)

April 1967 - Heavy rains and subsequent runoff damaged the dike of one of the retention ponds (specific pond not identified) The dike was repaired and an overflow culvert was installed at the north end of the dike (RYAN, E S , DOW CHEMICAL COMPANY, 1967, "STATUS REPORT - WASTE DISPOSAL COORDINATION - APRIL 1967," INTERNAL LETTER TO E.A PUTZIER, DOW CHEMICAL COMPANY, MAY 9)

Based on annual reports, the use of alpha-numeric designations for the ponds, as opposed to the strictly numeric designations, began in approximately 1971

May 1971 - Sampling of the detention ponds was assigned to Site Survey (RYAN, E S , DOW CHEMICAL COMPANY, 1967, "STATUS REPORT - HEALTH PHYSICS WASTE DISPOSAL - MAY 1971," INTERNAL LETTER TO J B OWEN, DOW CHEMICAL COMPANY, JUNE 14)

September 1971 - The preliminary proposal for the Liquid Waste Control project was prepared The project would involve various improvements to the existing ponds and drainages to increase their storage volume Specifically, for the C-Series drainage, the dam of Pond C-1 (formerly Pond 9) would be raised and widened, and a new emergency spillway with a gate-controlled outlet would be built A filter blanket and toe drain would be installed on the downstream slope (DOW CHEMICAL COMPANY, 1971, "PRELIMINARY PROPOSAL, LIQUID WASTE CONTROL, ROCKY FLATS PLANT," SEPTEMBER)

December 1972 - Liquid Waste Control related construction activities on Woman Creek were taking place The overflow pipe on Woman Creek was installed (ALQUIST, J M , DOW CHEMICAL COMPANY, 1972, 1973, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," DECEMBER 25, JANUARY 1)

June 1973 - Rip-rap was installed on the Woman Creek dam spillway (at Pond C-1) (MARSCHALL, J R , DOW CHEMICAL COMPANY, 1973, "CONSTRUCTION ADMINISTRATION WEEKLY CONSTRUCTION STATUS REPORT," JUNE 8, JUNE 22)

August 1978 - Top soil was removed for construction of the Pond C-2 dam (BARKER, C.J , ROCKWELL INTERNATIONAL, 1978, "ENVIRONMENTAL ANALYSIS AND CONTROL WEEKLY HIGHLIGHTS - WEEK ENDING SEPTEMBER 1, 1978," INTERNAL LETTER TO M V WERKEMA, ROCKWELL INTERNATIONAL, SEPTEMBER 1)

July 1980 - Pond C-2 was placed in service (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1980, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING JULY 11, 1980," INTERNAL LETTER TO T.R CRITES, ROCKWELL INTERNATIONAL, JULY 11) Pond C-1, which was located on the Woman Creek Watercourse, was still part of the flow-through system for runoff upstream of the RFP Pond C-2 was located alongside the creek and Woman Creek flow was diverted around it Pond C-2 was built for the collection of water from a new interceptor ditch, which intercepted runoff from the southern portion of the plant (ROCKWELL INTERNATIONAL, 1981, "ANNUAL

ENVIRONMENTAL MONITORING REPORT, JANUARY - DECEMBER 1980," APRIL 20) *The collection system afforded better control of discharge of waters originating from the plant*

November 1982 - Pond C-2 was discharged (HORNBACHER, D D , ROCKWELL INTERNATIONAL, 1982, "ENVIRONMENTAL ANALYSIS WEEKLY HIGHLIGHTS - WEEK ENDING NOVEMBER 5, 1982," INTERNAL LETTER TO T R CRITES, ROCKWELL INTERNATIONAL, NOVEMBER 5)

February 1989 - A release of chromic acid from Building 444 went through the sewage treatment plant and into Pond B-3 Water from Pond B-3 was spray irrigated Runoff from spray irrigation at the south portion of the East Spray Field would have flowed to Ponds B-5 and C-2 (ROCKWELL INTERNATIONAL, 1989, "REPORT OF CHROMIC ACID LEAK FROM BUILDING 444 ACID RINSE WASTE TANK SYSTEM, ROCKY FLATS PLANT, GOLDEN, COLORADO," MARCH 29)

March 1989 - A Model 10 granular activated carbon treatment unit was installed at Pond C-2 (MENDE, E , EG&G, 1992, PERSONAL COMMUNICATION, SEPTEMBER 17)

April 1989 - A small amount of a nitric acid and nitrad waste solution spilled near Building 460 Some of the solution went into the storm drain and Pond C-2 (U S DOE, 1989, "RCRA CONTINGENCY PLAN IMPLEMENTATION REPORT," NO 89-002, APRIL 11)

April 1989* - Atrazine, an herbicide, was detected in Pond C-2 Water in Pond C-2 was spray aerated for two weeks prior to discharge (EG&G ROCKY FLATS, 1990, "ROCKY FLATS PLANT SITE ENVIRONMENTAL REPORT, JANUARY THROUGH DECEMBER 1989," DATE UNKNOWN)

1990 - Diversion of water from Rocky Flats around Standley Lake and Great Western Reservoir was initiated Surface runoff from the southern portion of the RFP is collected in an interceptor ditch and diverted to Pond C-2 The water is then transferred to the Broomfield diversion ditch, bypassing Great Western Reservoir (EG&G ROCKY FLATS, 1990, "ROCKY FLATS PLANT SITE ENVIRONMENTAL REPORT, JANUARY THROUGH DECEMBER 1990," DATE UNKNOWN) A pipeline was installed to enable transfer of water from Pond C-2 to Pond B-4 (U.S DOE, 1992, "HISTORICAL RELEASE REPORT FOR THE ROCKY FLATS PLANT," JUNE)

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert E. Fielder 9/17/92

SWD Regulatory Programs Manager Date

APPENDIX 3

ESTIMATED SPILL FLOW

Provided in this appendix is a table presenting minimum and maximum flow times and flow lengths from areas in drainage basins that handle regulated substances

ESTIMATED SPILL FLOW

Estimated minimum and maximum flow times were calculated for a potential spill to reach the surface water monitoring point for each drainage basin These minimum and maximum times were derived using the closest and farthest tank containing a regulated substance (or other area of concern) from each monitoring point For calculation purposes it was assumed that the tank of concern ruptured or failed catastrophically releasing the entire contents of the tank No evaluation was made of whether the tank had sufficient volume to provide materials for the entire flow length

The calculations were made using information from the Drainage Criteria Manual (Wright-McLaughlin Engineers, Denver, Colorado, March 1969) The equations used to make the calculations are as follows

$$t_i = \frac{1\ 8(1\ 1 - C_5)\sqrt{L}}{\sqrt[3]{S}}$$ for the initial 500 feet of flow, and

$$t_t = \frac{L}{60V}$$ for the remaining length of flow

where C_5 = the runoff coefficient for a five-year frequency (assumed light industrial area),
L = the length of the drainage pathway (feet),
S = the average slope of the drainage pathway (%),
V = the average flow velocity (feet/second) (assumed short grass pasture),
t_i = time for initial 500 feet of flow (seconds), and
t_t = time for remaining length of flow (seconds)

Tank information was obtained from the "Air Pollutant Emission Notice - Outside Industrial Storage Tanks" (EG&G, 1992) These calculations did not account for viscosity differences of materials All calculations were made assuming the release material had properties of water

At the current time, the monitoring points used for calculation of the flow times are not considered navigable waters of the United States These monitoring points represent locations at which spills occurring in the upstream drainage basins could be controlled Drainage ponds, including spill control ponds, are in existence below each of the monitoring points These spill control ponds could ultimately be used for spill control if efforts to control the spill upstream of the ponds are unsuccessful

The following table lists the minimum and maximum time that it would take for a spilled constituent to reach the monitoring point in its respective drainage basin For each drainage basin, two flow times are given, first, the minimum time resulting from the closest tank or point of concern, and second, the maximum time resulting from the farthest tank or point of concern Plate 1 identifies the drainage basin numbers.

Estimated Spill Flow

DRAINAGE AREA #	TANK # OR POINT OF CONCERN	TANK CONTENTS	TANK CONSTRUCTION AND CAPACITY	FLOW LENGTH (feet)	FLOW TIME (minutes)
2	272	Decontamination Water	Plastic, 2,000 gal	2175	51 24
	96	Sulfuric Acid	Steel, 3,000 gal	4400	94 83
3	240	WWTP Effluent	Steel, 734 gal	175	4 02
	242	Process Waste	Steel, 950000 gal	3600	53 91
4	268	Decontamination Sediment/Water	Plastic, 2500 gal	2975	30 90
	315	Water Influent (Hillside)	Steel, 15995 gal	3920	42 14
5	198	Untreated Process Waste	Steel, 121600 gal	1220	12 72
	155	Diesel	Unknown, 138 gal	3050	35 69
6	No known tanks or loading areas handling regulated substances in this area				
7	Loading dock, SE corner, Bldg 130	Varies	N/A	1200	13 33

References

EG&G, 1992, Air Pollutant Emission Notice - Outside Industrial Storage Tanks, EG&G Rocky Flats, April 24

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TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By _____ 9/17/92

SWD Regulatory Programs Manager Date

APPENDIX 4

TANK IDENTIFICATION SCHEDULE

Provided in this appendix is a list of outdoor industrial storage tanks

ATTACHMENT 3
Tank Identification Schedule

Tank No.	Bld. No.	UST No.	UST Name	Description	Contents	AG/UG	Capacity (gal)	Vent	Vented to	Comments
1	887			CONCRETE FOUNDATION DRAIN TANK	GROUND WATER	UG	2 000	OPEN	VA	
2	881	66	881 SE	STEEL FUEL TANK	DIESEL FUEL	UG	5 000	OPEN	VA	INCLUDED WITH THE EMERGENCY GENERATOR APEN REPORT
5	881	26	881 A NE	ABANDONED DIESEL FUEL TANK	EMPTY	UG	1 000	SEALED		SCHEDULED TO BE CLOSED/Abandoned
6	881	27	881 S	DIESEL FUEL TANK	CONCRETE	UG	2 000	SEALED		Abandoned
7	881	28	881 S 1A	#6 FUEL OIL TANK	CONCRETE	UG	15 000	SEALED		Abandoned
8	881	29	881 S 2A	#6 FUEL OIL TANK	CONCRETE	UG	15 000	SEALED		Abandoned
9	881	30	881 S 3A	#6 FUEL OIL TANK	CONCRETE	UG	15 000	SEALED		Abandoned
10	827	25	827 S	STEEL TANK	DIESEL	UG	2 000	OPEN	VA	INCLUDED WITH THE EMERGENCY GENERATOR APEN REPORT
11	883	31	883 N	TANK	EMPTY (DIESEL)	UG	1 000	OPEN	VA	OUT OF SERVICE PRIOR TO 1981
12	883			STEEL STORAGE TANK	LIQUID ARGON	AG	2 500	SRV	VA	
13	883			SEWAGE LIFT STATION	SEWAGE	UG	1,200	OPEN	VA	
14	881			STEEL STORAGE TANK	LIQUID NITROGEN	AG	3 000	SRV	VA	
15	881			STEEL STORAGE TANK	ORIOX ARGON	AG	3 025	SRV	VA	
16	883			FOUNDATION SUMP TANK	GROUND WATER	UG	2 000	OPEN	VA	
18	889AT			OLD PROCESS WASTE TANK	GROUND WATER	UG	3 000	OPEN	VA	Abandoned
19	889AT			OLD PROCESS WASTE TANK	GROUND WATER	UG	3 000	OPEN	VA	Abandoned
20	883			PORTABLE NITRIC ACID TRANSFER TANK	EMPTY	AG	500	SRV		NOT IN SERVICE
21	883			PORTABLE NITRIC ACID TRANSFER TANK	EMPTY	AG	500	SRV		NOT IN SERVICE
24	868			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
25	865			FOUNDATION SUMP	GROUNDWATER	UG		OPEN	VA	
26	865			STEEL TANK	CO2 CHEMTRON FIRE SYSTEM	AG	6 TONS	SRV	VA	
29	881BT			STEEL HELIUM TANK	ABANDONED	AG	900	OPEN	VA	
30	869			STEEL STORAGE TANK	CONDENSATE OILS OF N GAS LINE	UG	40	SRV	NONE	Pressure Tank
36	663			STEEL STORAGE TANK	DIESEL NO 1	AG	500	OPEN	VA	J A JONES TANK / MCDOUGAL OIL
37	663			STEEL PROPANE TANK	EMPTY	AG	250	SRV	VA	Not in use
38	886	57	828 I	STAINLESS STEEL TANK	U CONTAMINATED WASTEWATER	UG	264	HEPA	VA	
40	880			ST STL TANK D&I 2564	EMPTY	AG	400			Not in use
43	120			SEPTIC TANK	RAIN AND SEWAGE	UG	5 000	OPEN	VA	PUMPED WEEKLY BY RFP
50	218			STEEL STORAGE TANK	NITRIC ACID	AG	10 000	OPEN	VA	REPORTED WITH BUILDING 218 REPORT
51	218			STEEL STORAGE TANK	NITRIC ACID	AG	10 000	OPEN	VA	DONE WITH BUILDING 218 REPORT
52	218			PORTABLE NITRIC ACID TRANSFER TANK	EMPTY	AG	500	SRV		NOT IN SERVICE
57	460			STEEL STORAGE TANK	LIQUID NITROGEN	AG	3 000	SRV	VA	
58	460			STEEL STORAGE TANK	ORIOX ARGON	AG		SRV	VA	
59	460			STEEL STORAGE TANK	LIQUID NITROGEN	AG	11 000	SRV	VA	
60	374			PORTABLE STEEL TANK	NITRIC ACID WASTE	AG	250	OPEN		BLDG 374 PROCESS WASTE TREATMENT OPERATIONS
61	374			PORTABLE STEEL TANK	NITRIC ACID WASTE	AG	250	OPEN		BLDG 374 PROCESS WASTE TREATMENT OPERATIONS
64	439AT			STEEL STORAGE TANK	PROPANE	AG	500	SRV	VA	WEST OF BUILDING T439A
66	447			STEEL STORAGE TANK	LIQUID NITROGEN	AG	1 500	SRV	VA	
67	447			STEEL STORAGE TANK	LIQUID NITROGEN	AG	1 300	SRV	VA	
68	427			ELEVATED STEEL FUEL TANK	DIESEL	AG	500	OPEN	VA	INCLUDED WITH THE EMERGENCY GENERATOR APEN REPORT
69	445			STEEL STORAGE TANK	LIQUID ARGON	AG	3 500	SRV	VA	
70	444			STEEL STORAGE TANK	LIQUID NITROGEN	AG	3 000	SRV	VA	
73	442AT			MAIN RECEIVER TANK	CONDENSATE FROM STEAM PLANT	AG	300 000	SRV	VA	
74	221			STORAGE TANK	NO 6 FUEL OIL	AG	840 000	OPEN	VA	TANK CAPACITY FROM BUILDING 221/224 APEN REPORT
75	224			STORAGE TANK	NO 6 FUEL OIL	AG	1 890 000	OPEN	VA	TANK CAPACITY FROM THE BUILDING 221/224 APEN REPORT
76	441			STEEL TANK	EMPTY	AG	UNKNOWN			ABANDONED EARLY 1980'S WAS USED TO HOLD BLD 123 PROCESS WASTE
77	441	36	428 I	CONCRETE PIT	EMPTY	UG	3 000			ABANDONED EARLY 1980'S WAS USED TO HOLD BLD 123 PROCESS WASTE
78	123				LIQUID NITROGEN	AG	1 760	SRV		TANK HAS BEEN REMOVED
79	123			STEEL STORAGE TANK	LIQUID NITROGEN	AG	1 300	SRV	VA	
80	123			STEEL STORAGE TANK	LIQUID NITROGEN	AG	350	SRV	VA	
81	123			STEEL STORAGE TANK	LIQUID NITROGEN	AG	350	SRV	VA	
82	123			STEEL TANK	SODIUM HYDROXIDE (EMPTY)	AG	160	OPEN	VA	TANK IN POOR REPAIR, NOT IN USE / ABANDONED
84	124			ELEVATED STEEL STORAGE TANK	WATER	AG	300 000	OPEN	VA	Water tower
85	124			STEEL STORAGE TANK	WATER	AG	500 000	OPEN	VA	
86	124			CONCRETE STORAGE TANK	WATER	UG	256 000	OPEN	VA	LOCATED IN BUILDING BASEMENT
87	124			CONCRETE SETTLING BEDS	RAW WATER AND SLUDGE	UG	57 600	OPEN	VA	

ATTACHMENT 3
Tank Identification Schedule

Tank No.	Bld. No.	UST No.	UST Name	Description	Contents	AG/UG	Capacity (gal)	Vent	Vented to	Comments
88	124			CONCRETE SETTLING BEDS	RAW WATER AND SLUDGE	UG	57 600	OPEN	VA	
89	442AT			STEEL STORAGE TANK	PROPANE	AG	250	SRV	VA	
90	443	9	443 SE	STEEL TANK	DIESEL FUEL	UG	1 500	OPEN	VA	COMPLETED WITH THE BUILDING 443 APEN REPORT
91	443	13	443 NE	FIBERGLASS STORAGE TANK	DIESEL FUEL	UG	2 000	OPEN	VA	COMPLETED WITH THE BUILDING 443 APEN REPORT
92	443	10	443 E 1	FUEL TANK	NO 6 FUEL OIL	UG	20 000	OPEN	VA	COMPLETED WITH THE BUILDING 443 APEN REPORT
93	443	11	443 E 2	FUEL TANK	NO 6 FUEL OIL	UG	20 000	OPEN	VA	COMPLETED WITH THE BUILDING 443 APEN REPORT
94	443	12	443 E 3	FUEL TANK	NO 6 FUEL OIL	UG	20 000	OPEN	VA	REPORTED WITH THE BUILDING 443 APEN REPORT
95	443	65	443 E 4	FUEL TANK	NO 6 FUEL OIL	UG	20 000	OPEN	VA	ABANDONED REPORTED WITH THE BUILDING 443 APEN REPORT
96	443			STEEL ELEVATED TANK	SULFURIC ACID	AG	3 000	OPEN	VA	REPORTED WITH THE BUILDING 443 APEN REPORT
97	443			STEEL ELEVATED TANK	SODIUM HYDROXIDE	AG	3 000	OPEN	VA	REPORTED WITH THE BUILDING 443 APEN REPORT
98	443			STEEL ELEVATED TANK	BOILER BLOWDOWN	AG	1 000	OPEN	VA	TANK IS LARGER BUT OVERFLOW IS AT 1000 GALLONS OVERFLOW IS TO SEWER SYSTEM
100	331			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
101	331	6	331 N 1A	FIBERGLASS REINFORCED PLASTIC TANK	DIESEL BLEND 60% #2 & 40% #1	UG	6 000	VPR		INCLUDED IN THE BUILDING 331 APEN REPORT
102	331	6	331 N 1	FIBERGLASS REINFORCED PLASTIC TANK	DIESEL BLEND #2 60% & #1 40%	UG	6 000	VPR		INCLUDED IN THE BUILDING 331 APEN REPORT
103	331	8	331 N	CARBON STEEL TANK	GASOLINE	UG	18 800	VPR		INCLUDED IN THE BUILDING 331 APEN REPORT TANK CAPACITY FROM THE APEN REPORT
104	331	7	331 N 2	CARBON STEEL TANK	GASOLINE	UG	6 000	OPEN	VA	INCLUDED IN THE BUILDING 331 APEN REPORT
106	334			STEEL STORAGE TANK	DRUOX ARGON	AG	1 500	SRV	VA	
108	556			AIR COMPRESSOR TANK	AIR	AG	140	SRV	VA	
109	552			STEEL STORAGE TANK	LIQUID NITROGEN	AG	2 500	SRV	VA	
110	549			STEEL STORAGE TANK	PROPANE	AG	500	SRV	VA	
111	549			STEEL STORAGE TANK	PROPANE	AG	500	SRV	VA	
113	750P			TANKER TRUCK	INCIDENTAL WATERS	AG	14 000	OPEN	VA	
114	904P			TANKER TRUCK	INCIDENTAL WATERS	AG	14 000	OPEN	VA	
115	335			STEEL STORAGE TANK	PROPANE	AG	500	SRV	VA	
117	124			TEMPORARY TANK		AG				USED DURING CONSTRUCTION
118	250			SEPTIC TANK	RAW SEWAGE	UG	2 000	OPEN	VA	
119	250			SEPTIC TANK	RAW SEWAGE	UG	2 000	OPEN	VA	
120	250			SEPTIC TANK	RAW SEWAGE	UG	2 000	OPEN	VA	
121	250			STORAGE TANK	HOT WATER	UG	5 000	SRV	VA	
122	250			STORAGE TANK	CHILLED WATER	UG	10 000	OPEN	VA	
123	250			STORAGE TANK	CHILLED WATER	UG	10 000	OPEN	VA	
124	A60			ELEVATED FUEL TANK	LEADED GASOLINE	AG	264	OPEN	VA	TANK HAS BEEN REMOVED
125	A60			STEEL STORAGE TANK	GASOLINE	AG	264	OPEN	VA	REX OIL / SERI
126	A60			HOLDING SEWAGE TANK	RAW SEWAGE	UG	1 000	OPEN	VA	SERI IS THE TANK USER EXPECTED TO BE BACK IN OPERATION SOON
127	A60				COMPRESSED AIR	AG	80	SRV		TANK HAS BEEN REMOVED
128	559			STEEL STORAGE TANK	LIQUID NITROGEN	AG	650	SRV	VA	
129	559			STEEL STORAGE TANK	LIQUID ARGON	AG	1 400	SRV	VA	
130	559	14	559 NE	STORAGE TANK (EG&G #14)	DIESEL	UG	1 000	OPEN	VA	
131	562	15	562 E	STORAGE TANK (EG&G #15)	DIESEL	UG	3 000	OPEN	VA	INCLUDED IN THE EMERGENCY GENERATOR APEN REPORT
132	566			STORAGE TANK	DIESEL	AG	910	OPEN	VA	INCLUDED IN THE BUILDING 566 EMERGENCY GENERATOR APEN REPORT
133	727			STEEL FILL TANK	GLYCOL	AG	8	SRV	VA	
134	779			STEEL STORAGE TANK	LIQUID NITROGEN	AG	5 000	SRV	VA	
135	779	24	779 NE	STORAGE TANK (EG&G #24)	DIESEL	UG	560	OPEN	VA	INCLUDED IN THE EMERGENCY GENERATOR APEN REPORT
136	788			SILO	CEMENT (1000 CU FT)	AG	9 500	OPEN	VA	NOT IN USE
137	788			SILO	CEMENT	AG	5 455	OPEN	VA	NOT IN USE
138	788			SLUDGE THICKNER TANK	PW SLUDGE	AG	35 000	OPEN	VA	NOT IN USE
139	788			STEEL STORAGE TANK	PROPANE	AG	500	SRV	VA	
140	928			STEEL STORAGE TANK	DIESEL	AG	470	OPEN	VA	
141	928			STEEL STORAGE TANK 215 C	DOMESTIC COLD WATER	AG	500 000	OPEN	VA	
142	928			STEEL STORAGE TANK 215 D	DOMESTIC COLD WATER	AG	500 000	OPEN	VA	
143	910			STORAGE TANK 450 05A	NOT IN USE	AG	1 000			REPORTED WITH THE BUILDINGS/TANK 226 227 231A AND 231B APEN REPORT
144	910			STORAGE TANK D 15	NOT IN USE	UG	5 236	OPEN	VA	REPORTED WITH THE BUILDINGS/TANK 226 227 231A AND 231B APEN REPORT
145	750P			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
146	750P			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
147	750P			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
148	750P			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	

ATTACHMENT 3
Tank Identification Schedule

Tank No.	Bld. No.	UST No.	UST Name	Description	Contents	AG/ UG	Capacity (gal)	Vent	Vented to	Comments
149	991			STEEL STORAGE TANK	LIQUID WASTE CHROMIUM	AG	500	OPEN	VA	
150	989			STEEL FILL TANK	GLYCOL	AG	4	SRV	VA	
151	988	33	988 E	CARBON STEEL TANK	DIESEL	UG	3 000	OPEN	VA	INCLUDED IN THE EMERGENCY GENERATOR APEN REPORT
152	792A			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
153	792A			STEEL TANK	DIESEL	AG	138	OPEN	VA	INCLUDED WITH THE EMERGENCY GENERATOR APEN REPORT
154	372A			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
155	372A			EMERGENCY GENERATOR TANK	DIESEL	AG	138	OPEN	VA	INCLUDED WITH THE EMERGENCY GENERATOR APEN REPORT TANK CAPACITY FROM APEN REPORT
156	367			PROPANE TRANSPORT TRUCK	EMPTY	AG	4 512	OPEN		NOT IN SERVICE
157	374			PORTABLE TANK	PROCESS WASTE LIQUIDS	AG	500	MANUAL		BLDG 374 PROCESS WASTE TREATMENT OPERATIONS
158	374			PORTABLE TANK	PROCESS WASTE LIQUIDS	AG	500	MANUAL		BLDG 374 PROCESS WASTE TREATMENT OPERATIONS
161	849			STEEL TANK ACCUMMULATOR	FREON 12	AG	24	NONE	VA	
162	762A			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
163	374			PRODUCT WATER T 808A	EMPTY	AG	100 000	OPEN	VA	NEVER USED
164	374			PRODUCT WATER T 808B	EMPTY	AG	100 000	OPEN	VA	NEVER USED
165	374			CEMENT SILO S 1	CEMENT (85 000 LBS)	AG			VA	VENTS TO BAGHOUSE
166	374			STEEL STORAGE TANK	LIQUID ARGON	AG		SRV	VA	
167	374			STEEL STORAGE TANK 450-811	NITRIC ACID	AG	15 941	OPEN	VA	NOTE ON SIDE OF TANK MAX FILL 3500 GAL
168	374			STEEL STORAGE TANK 450 809	POTASSIUM HYDROXIDE	AG	28 502	OPEN	VA	
169	374			STEEL STORAGE TANK 450-810	POTASSIUM HYDROXIDE	AG	10 392	OPEN	VA	
170	371			STEEL STORAGE TANK	LIQUID NITROGEN	AG	700	SRV	VA	
171	371	4	371 N	FRP STORAGE TANK D 262	#2 DIESEL	UG	44 000	OPEN	VA	INCLUDED WITH THE BUILDING 371 APEN REPORT TANK CAPACITY FROM BUILDING INTERVIEW
172	771JT			STEEL STORAGE TANK	PROPANE	AG	500	SRV	VA	
173	771BT			STEEL STORAGE TANK	PROPANE	AG	500	SRV	VA	
174	771			STEEL STORAGE TANK	LIQUID ARGON	AG	1 500	SRV	VA	
175	771			STEEL STORAGE TANK	LIQUID NITROGEN	AG	1 900	SRV	VA	771 N WRITTEN ON SIDE
176	774			STORAGE TANK	SODIUM HYDROXIDE	AG	6 000	OPEN	VA	EMPTY
177	771GT			STEEL HOLDING TANK T 107	EMPTY (OUT OF SERVICE)	AG		OPEN	VA	EAST TANK, FILL LINES CAPPED
178	771GT			STEEL HOLDING TANK T 108	EMPTY (OUT OF SERVICE)	AG		OPEN	VA	WEST TANK FILL LINES CAPPED
179	771GT			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
180	774			STORAGE TANK 71 4150	COOLING WATER	AG	300	OPEN	VA	
181	772			PROPANE TRANSPORT TRUCK	EMPTY	AG				NOT INSTALLED / CONSTRUCTION DISCONTINUED
182	774	51	774 T 66	CONCRETE TANK #66	EMPTY	UG	14 000	CAPPED	VA	OUT OF SERVICE
183	774	52	774 T 67	CONCRETE TANK #67	EMPTY	UG	14 000	CAPPED	VA	OUT OF SERVICE
184	774	53	774 T 68	CONCRETE TANK #68	EMPTY	UG	30 000	CAPPED	VA	OUT OF SERVICE
185	714			STEEL HOLDING TANK 771 4204	POTASSIUM HYDROXIDE	AG	5 562	OPEN	VA	
186	714			HYDROGEN FLUORIDE TANK	EMPTY		192			TANK HAS BEEN REMOVED & OPERATIONS DISCONTINUED
187	714			HYDROGEN FLUORIDE TANK	EMPTY		192			TANK HAS BEEN REMOVED & OPERATIONS DISCONTINUED
188	714			HYDROGEN FLUORIDE TANK	EMPTY		192			TANK HAS BEEN REMOVED & OPERATIONS DISCONTINUED
189	714			HYDROGEN FLUORIDE TANK	EMPTY		192			TANK HAS BEEN REMOVED & OPERATIONS DISCONTINUED
190	714			HYDROGEN FLUORIDE TANK	EMPTY		192			TANK HAS BEEN REMOVED & OPERATIONS DISCONTINUED
191	714			HYDROGEN FLUORIDE TANK	EMPTY		192			TANK HAS BEEN REMOVED & OPERATIONS DISCONTINUED
192	714	20	771 SE	CARBON STEEL TANK	DIESEL	UG	3 000	OPEN	VA	Out of service 1972 SCHEDULED TO BE REMOVED CLOSED
193	713	21	771 S	FIBERGLASS STORAGE TANK (EG&G #21)	DIESEL	UG	5 260	OPEN	VA	INCLUDED IN THE EMERGENCY GENERATOR APEN REPORT
194	714			STEEL STORAGE TANK D 44	HYDROFLUORIC ACID	AG	12	MANUAL	VA	EMPTY
195	714			STEEL STORAGE TANK D 45	HYDROFLUORIC ACID	AG	15	OPEN	VA	EMPTY
197	713			STEEL STORAGE TANK 450 781	PROPANE (EMPTY)	AG	18 377	SRV	VA	
198	703			STEEL STORAGE TANK 207	UNTREATED PROCESS WASTE	AG	121 600	OPEN	VA	COMPLETED WITH BLD 207 APEN REPORT OLD PROCESS WASTE SYSTEM
199	777			STEEL STORAGE TANK	LIQUID NITROGEN	AG	2 500	SRV	VA	
200	777			STEEL STORAGE TANK	LIQUID ARGON	AG	2 538	SRV	VA	
201	777			STEEL TANK 455-641	BREATHING AIR	AG	200	SRV	VA	
202	777			STEEL STORAGE TANK	DIESEL	AG	1 000	OPEN	VA	Fuel for the FBI
203	774			STEEL STORAGE TANK	WATER W/ COOLANT	AG		SRV	VA	PREVIOUSLY HELD A WATER/FREON MIX. HAS BEEN INACTIVE FOR 10-15 YEARS
204	729	18	729 E	STORAGE TANK	DIESEL	UG	650	OPEN	VA	INCLUDED IN THE EMERGENCY GENERATOR APEN REPORT
205	705			STEEL STORAGE TANK	LIQUID NITROGEN	AG	1 300	SRV	VA	
206	707			STEEL STORAGE TANK D 2	CARBON TETRACHLORIDE	AG	5 440	SRV	VA	
207	776			STEEL STORAGE TANK	LIQUID ARGON	AG	800	SRV	VA	

ATTACHMENT 3
Tank Identification Schedule

Tank No.	Bld. No.	UST No.	UST Name	Description	Contents	AG/ UG	Capacity (gal)	Vent	Vented to	Comments
206	707			STEEL STORAGE TANK	LIQUID ARGON	AG	1 420	SRV	VA	
209	707			STEEL STORAGE TANK V 41	HELIUM	AG	447	SRV	VA	WEST BANK TOP LEVEL
210	707			STEEL STORAGE TANK V 41	HELIUM	AG	447	SRV	VA	WEST BANK TOP LEVEL
211	707			STEEL STORAGE TANK V 41	HELIUM	AG	447	SRV	VA	WEST BANK TOP LEVEL
212	707			STEEL STORAGE TANK V 41	HELIUM	AG	447	SRV	VA	WEST BANK, TOP LEVEL
213	707			STEEL STORAGE TANK V 42	HELIUM	AG	447	SRV	VA	WEST BANK BOTTOM LEVEL
214	707			STEEL STORAGE TANK V 42	HELIUM	AG	447	SRV	VA	WEST BANK BOTTOM LEVEL
215	707			STEEL STORAGE TANK V 42	HELIUM	AG	447	SRV	VA	WEST BANK BOTTOM LEVEL
216	707			STEEL STORAGE TANK V 42	HELIUM	AG	447	SRV	VA	WEST BANK BOTTOM LEVEL
217	707			STEEL STORAGE TANK V 40	HELIUM	AG	447	SRV	VA	EAST BANK
218	707			STEEL STORAGE TANK V 40	HELIUM	AG	447	SRV	VA	EAST BANK
219	707			STEEL STORAGE TANK V 40	HELIUM	AG	447	SRV	VA	EAST BANK
220	707			STEEL STORAGE TANK V 40	HELIUM	AG	447	SRV	VA	EAST BANK
221	707			STEEL STORAGE TANK V 40	HELIUM	AG	447	SRV	VA	EAST BANK
223	707			STEEL STORAGE TANK	LIQUID NITROGEN	AG	3 000	SRV	VA	
224	374			1ST EFFECT VAPOR BODY T 802	H2O WITH NaOH pH 12 0	AG	3 606	RD	VA	EMISSIONS WERE REPORTED WITH BLD 374 APEN
225	374			2ND EFFECT VAPOR BODY T 803	H2O WITH NaOH pH 13 0	AG	4 645	RD	VA	EMISSIONS WERE REPORTED WITH BLD 374 APEN
226	374			3RD EFFECT VAPOR BODY T 804	H2O WITH NaOH pH 14 0	AG	5 553	RD	VA	EMISSIONS WERE REPORTED WITH BLD 374 APEN
227	374			4TH EFFECT VAPOR BODY T 805	H2O WITH NaOH pH 14 0	AG	33 013	RD	VA	EMISSIONS WERE REPORTED WITH BLD 374 APEN
228	374			STEEL SPRAY DRYER W803	DRIED INORGANIC SALT	AG	5 386	VES	VA	EMISSIONS WERE REPORTED WITH BLD 374 APEN
229	715			PORTABLE TANK	DIESEL	AG	972	OPEN		TANK HAS BEEN REMOVED
230	764			STEEL FILL TANK	GLYCOL	AG	10	SRV	VA	PRESSURE TANK
231	770			STEEL STORAGE TANK	LIQUID ARGON	AG	4 500	SRV	VA	
232	727	18	727 W	STEEL STORAGE TANK (EG&G #18)	DIESEL	UG	3 000	OPEN	VA	INCLUDED IN THE EMERGENCY GENERATOR APEN REPORT
233	223			STEEL STORAGE TANK	NITROGEN	AG	60 000	SRV	VA	IDENTIFIED TANKS ARE AT THE NEW BUILDING 223 REPORTED IN THE BUILDING 223 APEN REPORT
234	223			STEEL STORAGE TANK	NITROGEN	AG	60 000	SRV	VA	IDENTIFIED TANKS ARE AT THE NEW BUILDING 223 REPORTED IN THE BUILDING 223 APEN REPORT
235	762A			STORAGE TANK	DIESEL	AG	140	OPEN	VA	INCLUDED IN THE EMERGENCY GENERATOR APEN REPORT
236	788			PUGMILL	PW SLUDGE AND CEMENT	AG	637	OPEN	VA	NOT IN USE
237	760AT			STEEL STORAGE TANK	PROPANE	AG	500	SRV	VA	
238	968			STEEL TANK SAND FILTER 1208	STP EFFLUENT	AG	734	SRV	VA	PRESSURE TANK
239	968			STEEL TANK SAND FILTER 1209	STP EFFLUENT	AG	734	SRV	VA	PRESSURE TANK
240	968			STEEL TANK SAND FILTER 1210	STP EFFLUENT	AG	734	SRV	VA	PRESSURE TANK
241	231			STEEL STORAGE TANK 231A	PROCESS WASTE	AG	250 000	HEPA	VA	RCRA UNIT 374 43 01 REPORTED WITH THE BUILDING 231 APEN REPORT
242	231			STEEL STORAGE TANK 231B	PROCESS WASTE	AG	950 000	HEPA	VA	RCRA UNIT 374 43 02 REPORTED WITH THE BUILDING 231 APEN REPORT
243	920	32	920 NW	STORAGE TANK 32	DIESEL	UG	1 000	OPEN	VA	INCLUDED IN THE EMERGENCY GENERATOR APEN REPORT
244	776	22	776 N	STORAGE TANK	EMPTY MARCH 1991	UG	1 000	OPEN	VA	OUT OF SERVICE TO BE REMOVED
245	776	23	776 NW	CARBON STEEL TANK	DIESEL	UG	5 000	OPEN	VA	EMERGENCY GENERATOR
247	920			TANK	SEWAGE	UG		OPEN	VA	PUMPED WEEKLY
248	750P			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
249	750P			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
250	750P			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
251	750P			STEEL STORAGE TANK	PROPANE	AG	1 000	SRV	VA	
252	865			STEEL PRESSURE TANK	LIQUID ARGON	AG		SRV	VA	NEW 1990
253	891			UV/OX SURGE TANK	TREATED WATER	AG	15 895			INCLUDED WITH THE 881 HILLSIDE APEN REPORT
254	904P			STEEL TANK	PROPANE	AG	1 000	SRV	VA	TANK ASSOCIATED WITH PONDCRETE OPERATIONS
255	904P			STEEL TANK	PROPANE	AG	1 000	SRV	VA	TANK ASSOCIATED WITH PONDCRETE OPERATIONS
256	904P			STEEL TANK	PROPANE	AG	1 000	SRV	VA	TANK ASSOCIATED WITH PONDCRETE OPERATIONS
257	904P			STEEL TANK	PROPANE	AG	1 000	SRV	VA	TANK ASSOCIATED WITH PONDCRETE OPERATIONS
258	904P			STEEL TANK	PROPANE	AG	1 000	SRV	VA	TANK ASSOCIATED WITH PONDCRETE OPERATIONS
259	904P			STEEL TANK	PROPANE	AG	1 000	SRV	VA	TANK ASSOCIATED WITH PONDCRETE OPERATIONS
260	904P			STEEL TANK	PROPANE	AG	1 000	SRV	VA	TANK ASSOCIATED WITH PONDCRETE OPERATIONS
261	904P			STEEL TANK	PROPANE	AG	1 000	SRV	VA	TANK ASSOCIATED WITH PONDCRETE OPERATIONS
262	904P			PLASTIC TANK	DECONTAMINATION WATER	AG	2 500	OPEN	VA	TANK ASSOCIATED DECONTAMINATION PAD
263	904P			PLASTIC TANK	DECONTAMINATION WATER	AG	2 500	OPEN	VA	TANK ASSOCIATED DECONTAMINATION PAD
264	904P			PLASTIC TANK	DECONTAMINATION WATER	AG	2 500	OPEN	VA	TANK ASSOCIATED DECONTAMINATION PAD
265	904P			PLASTIC TANK	DECONTAMINATION WATER	AG	2 500	OPEN	VA	TANK ASSOCIATED DECONTAMINATION PAD

ATTACHMENT 3
Tank Identification Schedule

Tank No.	Bld. No.	UST No.	UST Name	Description	Contents	AG/ UG	Capacity (gal)	Vent	Vented to	Comments
266	904P			PLASTIC TANK	DECONTAMINATION WATER	AG	2 500	OPEN	VA	TANK ASSOCIATED DECONTAMINATION PAD
267	904P			PLASTIC TANK	DECONTAMINATION SEDIMENT/WATEF	AG	2 500	OPEN	VA	TANK ASSOCIATED DECONTAMINATION PAD
268	904P			PLASTIC TANK	DECONTAMINATION SEDIMENT/WATEF	AG	2 500	OPEN	VA	TANK ASSOCIATED DECONTAMINATION PAD
269	860T			PLASTIC TANK	DECONTAMINATION WATER	AG	2 000	OPEN	VA	TANK ASSOCIATED (OLD) DECONTAMINATION PAD
270	860T			PLASTIC TANK	DECONTAMINATION WATER	AG	2 000	OPEN	VA	TANK ASSOCIATED (OLD) DECONTAMINATION PAD
271	860T			PLASTIC TANK	DECONTAMINATION WATER	AG	2 000	OPEN	VA	TANK ASSOCIATED (OLD) DECONTAMINATION PAD
272	860T			PLASTIC TANK	DECONTAMINATION WATER	AG	2 000	OPEN	VA	TANK ASSOCIATED (OLD) DECONTAMINATION PAD
273	860T			PLASTIC TANK	DECONTAMINATION WATER	AG	2 000	OPEN	VA	TANK ASSOCIATED (OLD) DECONTAMINATION PAD
274	860T			GALVINIZED STEEL	DECONTAMINATION SEDIMENT/WATEF	AG	950	OPEN	VA	TANK ASSOCIATED (OLD) DECONTAMINATION PAD
275	860T			GALVINIZED STEEL TANK	DECONTAMINATION SEDIMENT/WATEF	AG	950	OPEN	VA	TANK ASSOCIATED (OLD) DECONTAMINATION PAD
276	126			STEEL TANK	COMPRESSED AIR	AG		SRV	VA	
278	124			CONCRETE SUMP TANK	RAW WATER FROM DRYING BED	UG	900	OPEN	VA	
280	122			STEEL STORAGE TANK	LIQUID NITROGEN	AG		SRV	VA	NEW TANK
281	124			CONCRETE SUMP	RAW WATER	UG	1 260	OPEN	VA	
282	A60			STEEL STOCK TANK, CEMENT FLOOR	EMPTY	AG		OPEN	VA	SERI IS THE TANK OWNER (SOLAR STORAGE SYSTEM)
284	707			STEEL STORAGE TANK V 40	HELIUM	AG	447	SRV	VA	EAST BANK
285	371	34	371 FW 1	CARBON STEEL TANK	FIRE WATER (FULL)	AG	3 000	NONE		ALSO NUMBERED D 710 LOCATED IN BUILDING BASEMENT PRESSURIZED WITH NITROGEN
286	371	35	371 FW 2	CARBON STEEL TANK	FIRE WATER (FULL)	AG	3 000	NONE		ALSO NUMBERED D 711 LOCATED IN BUILDING BASEMENT PRESSURIZED WITH NITROGEN
287	120	1	120 SE	CARBON STEEL TANK	DIESEL BLEND	UG	1 000	OPEN	VA	DONE WITH EMERGENCY GENERATOR REPORT
288	127	3	127 W	FIBERGLASS REINFORCED PLASTIC TAN	DIESEL BLEND	UG	550	OPEN	VA	DONE WITH EMERGENCY GENERATOR REPORT
289	124	2	124 S	FIBERGLASS REINFORCED PLASTIC TAN	DIESEL BLEND	UG	560	OPEN	VA	DONE WITH EMERGENCY GENERATOR REPORT
290	709	16	709 NW	CARBON STEEL TANK	DIESEL BLEND	UG	4 000	OPEN	VA	INCLUDED IN THE EMERGENCY GENERATOR APEN REPORT
291	718	17			DIESEL BLEND	UG	4 000			TANK HAS BEEN REMOVED
292	728	30	728 1	CONCRETE TANK	EMPTY	UG	25 000	OPEN	VA	FIREWATER COLLECTION
293	728	36	728 2	CONCRETE TANK	EMPTY	UG	25 000	OPEN	VA	FIREWATER COLLECTION
294	886	58	828 2	STAINLESS STEEL TANK	EMPTY	AG	250	VAC	VA	Abandoned 1978
295	865	59	865 1	OPEN TOP CONCRETE TANK	EMPTY/PROCESS WASTE	UG	3 000	OPEN	VA	TANK LOCATED IN BUILDING 865 IN USE AS A SUMP
296	865	60	865 2	OPEN TOP CONCRETE TANK	EMPTY/PROCESS WASTE	UG	3 000	OPEN	VA	TANK LOCATED IN BUILDING 865 IN USE AS A SUMP
297	782	56	782 FW	STAINLESS STEEL TANK	EMPTY	UG	3 000		VA	FIREWATER COLLECTION, TANK LOCATED WITHIN THE BUILDING
298	776	55	776 FW	FIBERGLASS REINFORCED PLASTIC	EMPTY	AG	3 000		VA	FIREWATER COLLECTION, TANK LOCATED IN THE BLD ROOM 127
299	561	37	561 FW	STAINLESS STEEL TANK	EMPTY	UG	3 000		VA	FIREWATER COLLECTION, INSIDE BUILDING
300	730	40	730 1	CONCRETE TANK	EMPTY	UG	22 500	NONE		FIREWATER COLLECTION
301	730	41	730 2	CONCRETE TANK	EMPTY	UG	22 500	NONE		FIREWATER COLLECTION
302	730	42	730 3	CONCRETE TANK	EMPTY	UG	4 500	NONE		Abandoned 1982
303	730	43	730 4	CONCRETE TANK	EMPTY	UG	4 500	NONE		Abandoned 1982
304	731	45	731 1	FIBERGLASS REINFORCED PLASTIC	PROCESS WASTE	UG	1 650	OPEN	VA	
305	731	46	731 2	FIBERGLASS REINFORCED PLASTIC	PROCESS WASTE	UG	1 650	OPEN	VA	
306	731	47	731 FW	STAINLESS STEEL TANK	PROCESS WASTE	AG	150	OPEN	VA	FIREWATER COLLECTION, OVERFLOWS TO FRP TANKS IN BLD
307	771	48	771 C	STAINLESS STEEL TANK	EMPTY	AG	500			LOCATED IN THE BUILDING AND USED FOR FIREWATER COLLECTION
308	771	49	771 FW	CARBON STEEL TANK	EMPTY	UG	5 000		VA	FIREWATER COLLECTION
310	774	51	774 T 49	CONCRETE TANK	EMPTY	UG	7 200			LOCATED IN THE BUILDING OUT OF SERVICE
311	875	61	875 FW	STAINLESS STEEL TANK	EMPTY	AG	3 000		BLDG	FIREWATER COLLECTION, TANK LOCATED IN BUILDING
312	869	62	869 W1	CONCRETE TANK	PROCESS WASTE	UG	1 000	VAC	VA	IN USE AS A PROCESS WASTE SUMP COMPLETED WITH BUILDING 869 APEN REPORT
313	869	63	869 W2	CONCRETE TANK	PROCESS WASTE	UG	1 000	VAC	VA	IN USE AS A PROCESS WASTE SUMP COMPLETED WITH BUILDING 869 APEN REPORT
314	865	64	865 FW	STAINLESS STEEL TANK	EMPTY	UG	3 000			FIREWATER COLLECTION TANK LOCATED IN THE BUILDING
315	881			STEEL TANK	WATER INFLUENT	AG	15 995			INCLUDED WITH THE 881 HILLSIDE APEN REPORT
316	881			STEEL TANK	WATER INFLUENT	AG	15 995			INCLUDED WITH THE 881 HILLSIDE APEN REPORT
317	881			STEEL TANK	DOMESTIC WATER	AG	15 995			INCLUDED WITH THE 881 HILLSIDE APEN REPORT
318	120			STEEL TANK	DIESEL BLEND	AG			VA	INCLUDED WITH THE 881 HILLSIDE APEN REPORT
319	920			STEEL TANK	DIESEL BLEND	AG			VA	INCLUDED WITH THE 881 HILLSIDE APEN REPORT
320	881			STEEL TANK	TREATED WATER	AG	144 000			INCLUDED WITH THE 881 HILLSIDE APEN REPORT
321	881			STEEL TANK	TREATED WATER	AG	144 000			INCLUDED WITH THE 881 HILLSIDE APEN REPORT
322	881			STEEL TANK	TREATED WATER	AG	144 000			INCLUDED WITH THE 881 HILLSIDE APEN REPORT

TITLE SPILL PREVENTION CONTROL COUNTERMEASURES AND BEST MANAGEMENT PRACTICES PLAN

CONTROL OF SWD Approved By Robert C. Tidwell 9/17/92

SWD Regulatory Programs Manager Date

APPENDIX 5

HAZ-MAT VAN AND HAZ-MAT TRAILER INVENTORIES

Included in this appendix is the Hazardous Material Van and Trailer inventories of June 24, 1992

Rocky Flats Fire Department
Standard Operating Procedure

Category Vehicle Inventory

Vehicle Haz-Mat Van

Approval

OUTSIDE LEFT FRONT COMPARTMENT:

2	Bags of Haz-Sorb-X pillows, 6 pillows per bag
1	Bag of 10 Oil Absorbent Peat Pads
1	Salvage cover, canvas 12' X 16'
1	Bag Absorbent Sheets (Minimum 100)

OUTSIDE LEFT REAR COMPARTMENT

12	Orange traffic cones

OUTSIDE RIGHT REAR COMPARTMENT.

1	1,000 Watt gasoline generator

OUTSIDE RIGHT FRONT COMPARTMENT.

1	Absorbent Boom, 10' (in bag)
3	Absorbent Pillows (2 bags)
10	Absorbent Pigs (in bag)
1	Plug, Cone, Wooden

OUTSIDE ROOF COMPARTMENT:

1	Weather mast and locking pin (built into ladder)
1	24' Aluminum extension ladder

INSIDE, DASH AREA:

2	Head Set, Intercom

COMMAND POST LIBRARY:

Top Shelf

1	Rocky Flats Plant Haz-Mat Book (Green)
1	Guidelines for the Selection of Chemical Protective Clothing (Blue)
1	Drum Color Coding Book
1	Haz-Mat Van Inventory Book
1	Rocky Flats Plan Haz-Mat Response Team Manual
1	Plant Phone Directory

COMMAND POST LIBRARY (Continued)

Top Shelf (Continued)

1 Acid Suite Compatibility Chart and Suit Exposure Forms
1 Building Floor Plan Map Book
MSDS Index + Volumes A thru E (4 Binders)

Second Shelf

MSDS Volumes F thru Z (7 Binders)

COMMAND POST DESK.

1 Cellular Telephone
2 Telephone Battery
2 Antenna
1 Eraser Board
1 Stop Watch
2 1990 Emergency Response Guide Books (orange)
1 NIOSH Pocket Guide to Chemical Hazards
1 Laboratory Waste Disposal Manual (blue spiral)
1 Team Leader Vest
20 (Minimum) Chem Trec and U S Coast Guard Information Sheets
20 (Minimum) Hazardous Materials Personnel Exposure Charts
20 (Minimum) Ruled Paper
20 (Minimum) Hazardous Materials Container Labels
20 (Minimum) Product Data Worksheets
5 (Minimum) Black Ink Pens
5 (Minimum) Pencils
5 (Minimum) Colored Markers
5 (Minimum) Highlighters
5 (Minimum) Erasers
5 (Minimum) Grease Pencils
5 (Minimum) Post-It Notes
1 (Box) (Minimum) Paper Clips

COMMAND POST - UNDER DESK

1 Emergency Action Guides
1 Chris Manual
1 Code of Federal Regulations, Parts 100-177

COMMAND POST - UNDER DESK (Continued)

1	Code of Federal Regulations, Parts 178, 179, 1910, and 1200
1	Rocky Flats Fire Department Standard Operating Procedures
1	Rocky Flats Plant Spill Prevention Control Book
1	Rocky Flats Plant On-Site Transportation Manual
1	U S DOE Community Right to Know Emergency and Haz-Mat Chemical Inventory
1	Hazardous Chemicals Information Manual
1	Fire Protection Guide on Hazardous Materials
1	Emergency Handling of Hazardous Materials in Surface Transportation
1	Hazardous Chemicals Desk Reference
1	Dangerous Properties of Industrial Chemicals
1	Emergency Care for Hazardous Materials Exposure
1	Pair Binoculars

RIGHT SIDE BEHIND COMMAND POST

2	Folding chairs
1	Folding table

FRONT CAB CEILING:

1	Weather Vane
1	Rocky Flats Plant Building Map

REAR DOORS.

1	Ladder hook
4	Spare SCBA Masks

COMPARTMENT #1:

2	Complete Proximity suits	
	2	gloves
	2	boots
	1	hood
	1	pants
	2	Nomex under garments

Category **Vehicle Inventory**

Vehicle **Haz-Mat Van**

COMPARTMENT #2:

- 15 Fully Encapsulated Saranex Suits
- 1 Safety Tech Bag
  - 3 Safety Tech Clipboards
  - 1 General Safety Tech Guide Book
  - 2 Pair Trauma Shears
  - 1 Safety Tech Vest
  - 4 Stethoscopes
  - 1 Blood Pressure Cuff
- 1 De-Con Bag
  - 3 De-Con Tech Notebooks
  - 1 De-Con Tech Guidelines Book

COMPARTMENT #3:

- 15 Pair Yellow Nuke Boots (In Bag)
- 4 Pair Trellchem Boots (In Bag)

COMPARTMENT #4:

- 9 Pair PVC Boots

ACID SUIT RACK #5

- 4 Chlonnated Polyethylene suits (blue)
- 4 Trellchem Suits (yellow)
- 4 Butyl suits (orange) with gloves and boots attached

ENCLOSED SHELF #5:

- 1 Bag Tyvek Suits (15 Minimum)
- 1 Bag PVC Suits - Green (15 Minimum)
- 1 Bag Rain Suits - Yellow (15 Minimum)

COMPARTMENT #6 BOTTOM SHELF:

- 1 Oxygen Cylinder with Regulator and Case (D Size)
- 3 Nasal Cannulas
- 3 Non-Rebreather Masks
- 1 **EMS Kit:**
  - Supply of 4x4 Gauze (left pocket)
  - Supply of 2x2 Gauze (left pocket)

Category **Vehicle Inventory**

Vehicle **Haz-Mat Van**

COMPARTMENT #6 BOTTOM SHELF (Continued)

EMS Kit: (Continued)

1	3" Coban Wrap (left pocket)
2	3" Kling Bandages (right pocket)
1	3" Coban Wrap (right pocket)
1	Roll of 1/2" Tape (right pocket)
1	Sterile Burn Sheet
1	Trauma Dressing
2	Bottles Saline Irrigation Solution
1	Macro Drip Set-Up
	Supply of Combination Dressings
1	Pair Bandage Scissors
2	3" Coban Wrap
2	Rolls 2" Tape
6	Pairs Coveralls
2	Boxes Kim-wipes
1	Flood Lamp with Double D Cord

COMPARTMENT #6 TOP SHELF.

2	Dragger Tube Kits
1	PH Test Kit
1	Hot Stick
1	Tic Tracer
1	Gas-Trac Meter

COMPARTMENT #7:

10	(Minimum) Latex Gloves (green) Solvex
10	(Minimum) Butyl Neoprene Gloves (black)
10	(Minimum) Latex Neoprene Gloves (blue/yellow)
10	(Minimum) Nitrile Gloves (blue)
10	(Minimum) PVC Gloves (green)
10	(Minimum) Surgical Gloves

COMPARTMENT #8:

1	1/2 Gallon Plastic Bottles of Tap Water
2	Large Sample Bottles
4	Medium Sample Bottles
2	Small Sample Bottles
2	Four-Pack Urine Sample Bottles

COMPARTMENT #8: (Continued)

1	One Liter Distilled Water
4	1-1/2" PVC Caps
4	2" PVC Caps
4	3" PVC Caps
4	4" PVC Caps
2	1-1/2" PVC Connectors
2	2" PVC Connectors
2	3" PVC Connectors
2	4" PVC Connectors

COMPARTMENT #9

1	Nonsparking sledge hammer
1	Tool Kit
1	1/2" drive socket set
1	3/8" drive socket set
1	3/8" drive extension
4	phillips screwdrivers
1	hacksaw with 10 blades
3	welders vice grips
2	vice grips
1	ball peen hammer
1	12" pipe wrench
1	8" pipe wrench
2	metal shears
1	wire cutters
2	large flathead screwdrivers
1	small pliers
1	large pliers
1	pair tongs
1	pair scissors
1	pair lineman pliers
3	open end adjustable wrenches
1	combination wrench, 1/4 thru 3/4
1	1-1/4" flat blade scraper
1	3" flat blade scraper
1	bung wrench
1	Rubber Mallet
1	Pair Bolt Cutters
1	Pry Ax
1	Come Along

COMPARTMENT #9: (Continued)

- 1 1-1/2" Fog Nozzle
- 1 Large Crescent Wrench
- 1 18" Pipe Wrench
- 1 Grounding Cable

COMPARTMENT #10.

- 1 "A" Chlorine capping kit (100-200# cylinders) inventory inside
- 1 "B" Chlorine capping kit (1-ton cylinders) inventory inside
- 1 RS-2 4-ton Black Hawk rescue kit
  - 1 3" extension tube
  - 1 5" extension tube
  - 1 10" extension tube
  - 1 18" extension tube
  - 1 Sliplock Extension
  - 1 Rubber Faced Base
  - 2 90 degree "V" base
  - 1 toe ram
  - 2 serrated saddle
  - 2 wedge head
  - 1 4-ton hydraulic hand pump
  - 1 hydraulic ram 4-ton
  - 1 hydraulic spreader
  - 1 flex head
  - 1 23" extension tube
  - 2 male connector
  - 1 hydraulic wedge ram
  - 1 toe plunger
  - 1 flat base
- 1 50 lb Bag Floor Absorbent

LEFT SIDE UNDER COMPARTMENT #10:

- 1 1-1/2" fire hose with garden hose reducer
- 2 Car wash wands for garden hose

COMPARTMENT #11:

- 4 Complete SCBAs
- 4 SCBA Mask with Communication System

Category **Vehicle Inventory**

Vehicle **Haz-Mat Van**

UNDER COMPARTMENT #11:

1	150' cord reel
1	Plastic bag dispenser
1	20' Extension Cord

INSIDE RIGHT REAR DOOR:

1	Ladder Hook
4	SCBA Masks

COMPARTMENT #12:

3	Hard hats
2	15' Triplex Adapters
1	2' Triplex Adapter
1	Set Tire Chains

LEFT SIDE UNDER COMPARTMENT #12:

1	Barrel cart
1	Rotary drum pump
1	Hand pump
1	Barrel lifter
1	Utility Rope 100' X 1/2"
1	50' Garden hose
1	25' Garden hose

COMPARTMENT #13:

3	Glovebox Bags (10 inch diameter)
1	Inline Caustic Pump
1	Submersible Sump Pump
2	8'x18' Decon Pools (hard side)
1	Bag of 5 Soft Side Decon Pools (with Bellows Pump)
6	Salvage Covers in Red Bags (3 each 12x14) (blue)
2	Body Bags
4	Pair Booties

COMPARTMENT #14

10	Assortment of sheet metal screws (minimum)
2	Supply of rubber gasket material (minimum)
2	Grounding clamps
3	Expanding plugs
15	Assortment of toggle plugs (minimum)
15	Assortment of pipe caps (minimum)
15	Assortment of threaded plugs (minimum)
10	Assortment of toggle bolts (minimum)
15	Assortment of rubber stoppers (minimum)
25	Supply of golf tees (minimum)
25	Assortment of hose clamps (minimum)
10	Assortment of tie straps (minimum)

COMPARTMENT #15

1	Roll Baling Wire
10	Assorted large Redwood Wedges (minimum)
20	Assorted small Redwood Wedges (minimum)
20	Assorted Wood Wedges in Black Ammo Box (minimum)
20	Assorted Wood Plugs (minimum)
4	Tubes of Silicone Sealant
1	Caulking Gun
2	Boxes Multi-Purpose Sealant
1	Roll Sandpaper
3	Plug and Patch Kits
4	Bags Cover Patch RE-25
6	Pig Repair Putty (Minimum)

COMPARTMENT #16:

1	**Series C Pipe Kit:**	
	10	Vented Pipe Plugs
	1	Pair Vicegrips
	1	1/2-9/16" ratchet wrenches
	1	3/8-7/16" ratchet wrenches
	1	Wood Wedge
1	**Series D Drum Kit:**	
	8	Rubber Stoppers
	1	Pair Pliers
	1	Bag Lead Wool
	1	Screwdriver

COMPARTMENT #16. (Continued)

Series D Drum Kit: (Continued)
- 1 Crochet Hook Screwdriver
- 6 Rubber Gasketed Screws
- 1 Steel Plug
- 1 Roll Nylon Strapping
- 1 Rubber Mallot
- 1 Sheet Hard Rubber
- 1 Roll Duct Tape

1 **Small Non-Sparking Tool Kit:**
- 1 Standard Tip Screwdriver
- 1 Phillips Screwdriver
- 2 Pair Slip Joint Pliers (6" and 8")
- 4 Combination Wrenches
- 1 Adjustable Open End Wrench
- 1 Wire Brush
- 1 Pipe Wrench
- 1 Claw Hammer
- 1 Pair Channelocks
- 1 Putty Knife
- 1 Utility Knife
- 1 Wrecking Bar

1 **Large Non-Sparking Tool Kit:**
- 2 Ballpeen Hammers
- 3 Pickhead Hammers
- 3 Triangle Scrapers
- 3 Wedge Scrapers
- 3 Crescent Wrenches (10", 12", 15")
- 1 Wrecking Bar
- 3 Pipe Wrenches (10", 14", 18")
- 2 Non-Sparking Bung Wrench
- 1 Flat Blade Screwdriver
- 2 Chisels
- 1 Non-Sparking Socket Set
  - 1 1/2" Drive Ratchet
  - 1 1/2" Adapter Stud for Ratchet
  - 1 1/2" Drive T Handle
  - 1 1/2" Extension
  - 5 1/2" Drive Sockets (1/4", 1/16", 7/16", 11/16", 1/2")

Category **Vehicle Inventory**

Vehicle **Haz-Mat Van**

COMPARTMENT #17:

2	Buckets of Plug and Dike
2	Buckets of Sodium Bicarbonate
2	Buckets of Oil Dry

PIPE RACK #18:

1	Decon Shower kit with bag
1	50 lb Bag Floor Absorbent
1	3 Gallon Drain Pan
1	10" Anti Splash Funnel
2	Dust Pans
1	Small Funnel

COMPARTMENT #19:

5	Sponges
1	Plastic Scoop
3	Car Wash Brushes
1	Fox Tail Brush
1	Steel Brush
1	Brass Brush
2	Scrub Brushes
1	Horse Hair Brush
2	Putty Knives
2	4 Connectors for Garden Hose

COMPARTMENT #20:

2	Rolls High Temperature Flue Tape
2	Rolls Haz Warn Ribbon
3	Siphon Tubes
2	Rolls 3" Duct Tape
2	Rolls 2" Plastic Tape
2	Rolls Electrical Black Vinyl Tape
5	Bottles Leak Tech
2	Rolls Masking Tape
6	Bottles Fast Response Foam

COMPARTMENT #21:

6	Cannisters Full Face Respirators

Category **Vehicle Inventory**

Vehicle **Haz-Mat Van**

COMPARTMENT #22:

8	MSA Full Face Respirators with Canister Type GNHF-C
6	MSA Full Face Respirators with Canister Type N

COMPARTMENT #23:

1	Bucket of Oil Dry
1	Bucket Sodium Bicarbonate
2	Buckets Oclansorb Oil Absorbent

SHELF #24:

3	Explosion Proof Lanterns
4	6 Volt Batteries

CLOSET #25:

1	Squeegee (shelf)
4	Push Brooms (shelf)
1	Pick Ax Head
2	Pry Bars
1	Non-Sparking Crow Bar
1	Fire Shovel
1	Non-Sparking Scoop Shovel
2	Broom Handles
1	Squeegee Handle
1	Dome Clamp
2	Command Post Barricades
2	Hazardous Area Barricades
1	Thompson Chem-Trex Electrical Pump

UPPER EQUIPMENT SHELF #26:

Supply of Printer Paper

LOWER EQUIPMENT SHELF #27:

2	Rechargeable Flashlights
1	MSA LEL Meter
2	Rechargeable Lanterns

LOWER EQUIPMENT SHELF #27. (Continued)

1	Lap Top Computer
1	Disk Drive
1	Printer (with Paper)

BELOW EQUIPMENT SHELF #28:

1	13 lb Halon Extinguisher
1	20 lb Metal X Extinguisher
1	20 lb Dry Chemical Extinguisher
2	MSA Foam Extinguishers
6	SCBA Cylinders
1	Sample Tube for MSA LEL Meter

EQUIPMENT COMPARTMENT #29

2	Supply Acid Suit ID Numbers on Clipboard (minimum)
	Anti-Fog Cloth
2	Pair Ear Muffs
4	Pair Safety Goggles

EQUIPMENT COMPARTMENT #30:

5	CO_2 Cartridges for MSA Foam Extinguishers
3	Bottles Talcum Powder
1	Pair Scissors
2	Pair Wrist Sweatbands
1	Surface Thermometer
4	Full Bars of Soap
1	Box Miniature Light Bulbs
2	Quick Guard Plug-In Receptacles
	Assortment of Batteries
2	Packs D Size Batteries
1	Pack AA Size Batteries
3	9 Volt Batteries

EQUIPMENT COMPARTMENT #31:

1	Sample Hoses for MSA LEL Meter
2	Batteries for Tomes Computer
5	Replacement Squeegee Blades

EQUIPMENT COMPARTMENT #32:

2	PH Pens
1	Chemical Spill Classifier Kit (Exp Date)
2	PH Lithmus Paper Kits

Category **Vehicle Inventory**

Vehicle **Haz-Mat Van**

"A" CHLORINE CAPPING KIT.

1	Hood Assembly w/Vent Valve
2	Molded Viton Gasket (1BMV)
1	Yoke (1C)
1	Cap Screw (1D)
3	Cap Screw (1K
1	Base Assembly w/Chains
1	Ramp
1	Spacer Plate
10	Garlock 951 15/16" x 1/16" Gasket
1	Clamp Assembly
1	Chain
1	Yoke (8B)
1	Cap Screw (8C)
1	Patch (8D)
2	Viton 2-1/2" square x 1/8" Gasket (8EV)
1	3/8" sq box end, 1-1/4" open end x 7-1/4" wrench
1	Open end 1-1/4" x 1-1/8" x 12-3/8" wrench
1	Box end 7/16" x 9/16" x 8-3/4" wrench
1	48 oz. Machinist Hammer
1	10" Hacksaw w/3 blades
2	9/32" x 1/2" x 6" Drift Pin
2	7/8" x 1-1/4" x 8" Drift Pin
5	Vent Valve Packing Ring
1	Gasket Sack
1	1-1/4" Blade Paint Scraper
1	Valve Yoke
1	820 Hose Valve Adapter
5	9/16" ID x 15/16" OD x 1/16" Valve Outlet Washer
1	Plastic Box
1	File
1	Tool Roll
1	Steel Box
1	Instruction Booklet
1	Chlorine Manual

"B" CHLORINE CAPPING KIT

1	Hood
3	4" OD x 2-3/8" ID x 1/4" Neoprene Gasket
1	Yoke (4C)
3	1-1/4" OD x 11/16" ID x 1/16" Garlock Gasket
1	Stud (4E)
1	Cap Nut (4F)
5	15/16" x 1/16" Garlock Gasket
1	Chain (9A)
1	Yoke (9B)
1	Cap Screw (9C)
1	Steel Patch
3	3" sq x 1/8" Neoprene Gasket
1	Hood Assembly w/Vent Valve
3	5" OD x 2" ID x 1/4" Neoprene Gasket
1	5" OD x 2" ID x 1/2" Neoprene Gasket
1	Bar Assembly
1	5-1/4" OD x 2-1/4" ID x 3/4" Molded Neoprene Gasket
1	1-1/4" x 12" Open End Wrench
1	1-1/4" hex Socket Wrench
1	1" Drive x 9" Extension Wrench
1	1" x 20" Wrench Bar
1	1-5/32" x 11" Crowfoot Wrench
1	3/8" sq Box End, 1-1/4" Open End x 7-1/4" Wrench
2	9/32" x 1/2" x 6" Drift Pin
2	7/8" x 1-1/4" x 8" Drift Pin
2	1-1/16" x 1-7/16" x 8" Drift Pin
5	Vent Valve Packing Ring
1	1-1/4" Blade Paint Scraper
1	3 lb Machinist Hammer
1	Gasket Sack
1	Valve Yoke (B-9)
1	Valve Adapter
5	15/16" OD x 9/16" ID x 1/16" Garlock Gasket
1	Plastic Box
1	Steel Box
1	Tool Roll
1	Instruction Booklet
1	Chlorine Facts Book

Rocky Flats Fire Department
Standard Operating Procedure

Category Vehicle Inventory

Vehicle ~~Haz-Mat Trailer~~

Approval

Shelf 1

2	Floor Squeegees
4	Window Squeegees
8	24" Broom Heads
2	Floor Squeegee Handles
6	Mop Handles
8	Broom Handles
2	Drum Pumps
10	Sponges
1	Drum Funnel
7	Trafic Cones

Shelf 2

2	5/8" x 50' Garden Hose
6	Dust Pans
6	Easy-Scrub Brushes
2	Wisp Broom
4	Foxtail Brushes
15	Kim-wipes (Boxes)
6	Mop Heads
2	Drain Pans
6	One Gallon Buckets
5	Wooden Cone Plugs
Supply	Toggle Bolts (Various Sizes)

Shelf 3

2	Water Jugs
4	Urine Sample Kits
2	Mop Buckets
2	Mop Wringers
2	Drink Cups (Packages)

Shelf 4

12	Absorbent Pillows
4	10' Absorbent Booms

Category **Vehicle Inventory**

Vehicle **Haz-Mat Trailer**

Page 2

Front Driver's Side Corner

4	Corn Brooms
2	Spade Shovel (Metal)
4	Square Head Shovel (Plastic)
2	Scoop Shovel (Plastic)

Shelf 5

2	Bales 3M Oil Absorbent Pillows (10 each)

Shelf 6

20	Coveralls (Assorted Sizes) - (MINIMUM)
20	T-Shirts (MINIMUM)

Shelf 7

3	Bob's "Oil Up" Sorbent Pads (200 per Bale) (MINIMUM)

Shelf 8

4	10' 3M Oil Sorbent Booms

Shelf 9

6	10' Absorbent Booms

Shelf 10

50	Yellow Rain Suits (MINIMUM)
10	Level A Suits (Saranex) (MINIMUM)

Shelf 11

20	Butyl Gloves (Black) (MINIMUM) Pairs

Shelf 12

4	10' Absorbent Booms

Category **Vehicle Inventory**

Vehicle **Haz-Mat Trailer**

Page 3

Shelf 13

20	Filter Bags for Mercury Vacuum
20	Pre-Filters for Mercury Vacuum (Pink)
1	Screen Insert for Water Pick-Up on Mercury Vacuum
3	HEPA Filters for Mercury Vacuum (Boxes)
3	(Attachments) for Mercury Vacuum
3	Charcoal Filters for Mercury Vacuum (Boxes)

Shelf 14

50	Tyvek Suits (MINIMUM)
50	Tyvek Hoods (MINIMUM)
50	Nuke Boots (MINIMUM)
20	PVC Rain Suits (MINIMUM)

Shelf 15

1	Latex Gloves - Left and Right (MINIMUM)
50	Nitrile Gloves (Blue) (MINIMUM) - Pairs
50	Solvex Gloves (Green) (MINIMUM) - Pairs

Shelf 16

2	Plastic Drum Liners (55 Gal) (Rolls)
2	Plastic Drum Liners (35 Gal) (Rolls)

Underneath Shelf 16

2	4" PVC Pipe (10' lengths)
2	3" PVC Pipe (10' lengths)
2	2" PVC Pipe (10' lengths)
2	1-1/2" PVC Pipe (10' lengths)
1	Sample Dip Cup

Left Driver's Side Rear

2	Salvage Drums (Yellow)
2	Skunk Drums (Black and White) (Drums located inside Salvage)
1	Mercury Vacuum

Category **Vehicle Inventory**

Vehicle **Haz-Mat Trailer**

Page 4

Right Passenger Side Rear

1	Inflatable Decon Tent
1	Heater Blower/Generator
5	Sodium Bicarbonate (100 Lb Bag) (MINIMUM)
5	Floor Dry Absorbent (50 Lb Bag) (MINIMUM)

Shelf 17

10	Polyethylene Tarps (Blue) (MINIMUM)

Shelf 18

8	Turnout Boots (MINIMUM) - Pair
2	PVC Boots (MINIMUM) - Pair
2	Neoprene Boots (MINIMUM) - Pair
2	Portable Flood Lights with Cords

Shelf 19

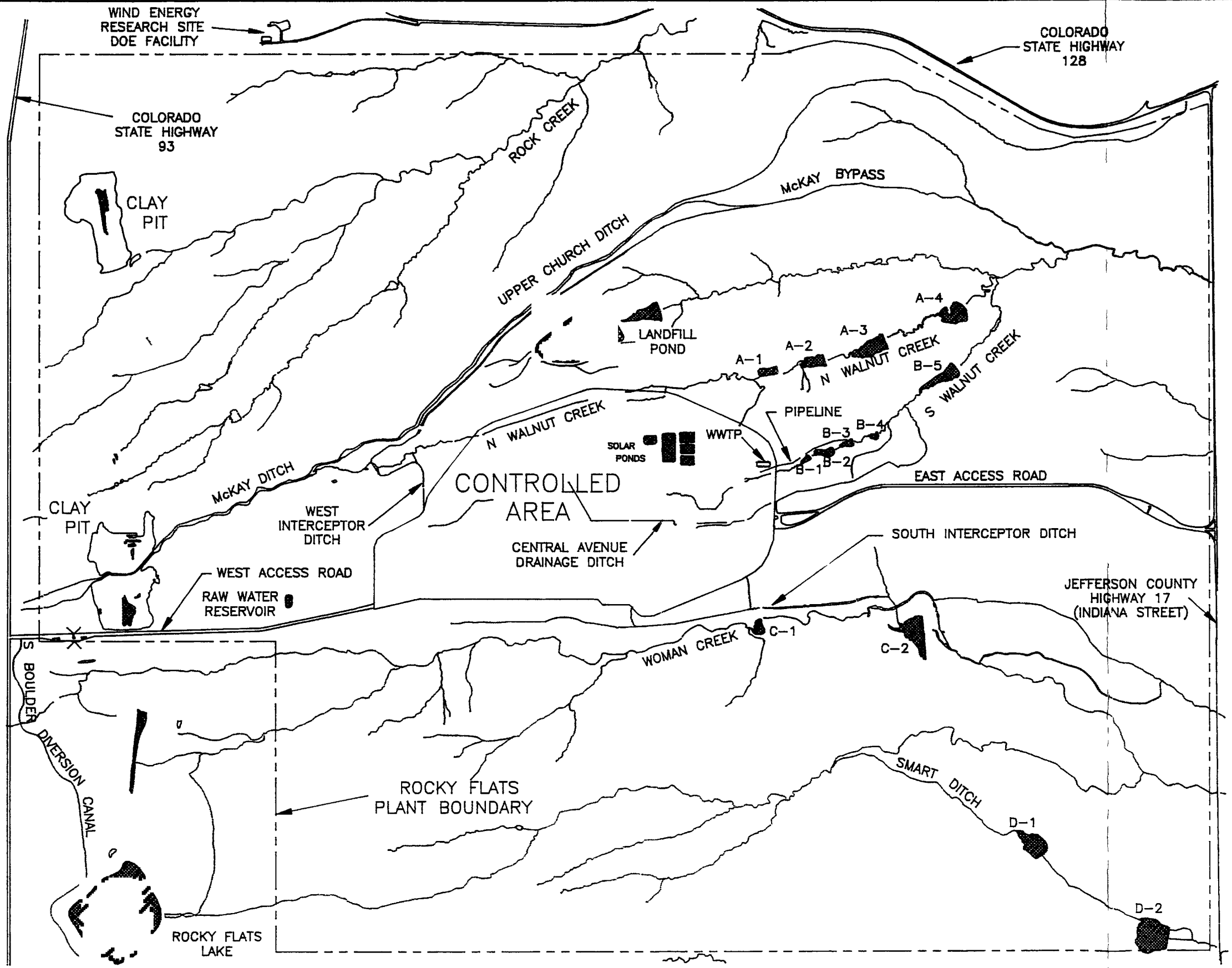
10	Inflatable Decon Pools (MINIMUM)
5	8' x 18" Decon Pools (MINIMUM)
1	Foot Pump
2	High Volume Bellows Pump
2	Little Giant Sump Pump
20	2" Duct Tape (Grey) (MINIMUM)
5	Barricade Tape (MINIMUM)
20	2" PVC Plastic Tape (Yellow) (MINIMUM)
10	3/4" Electrical Tape (MINIMUM)
10	2" Masking Tape (MINIMUM)
4	Safety Goggles
5	Leak-Tec

Shelf 20

30	Universal Sorbent Mini-Booms (MINIMUM)

Passenger Side Walk Door Inside

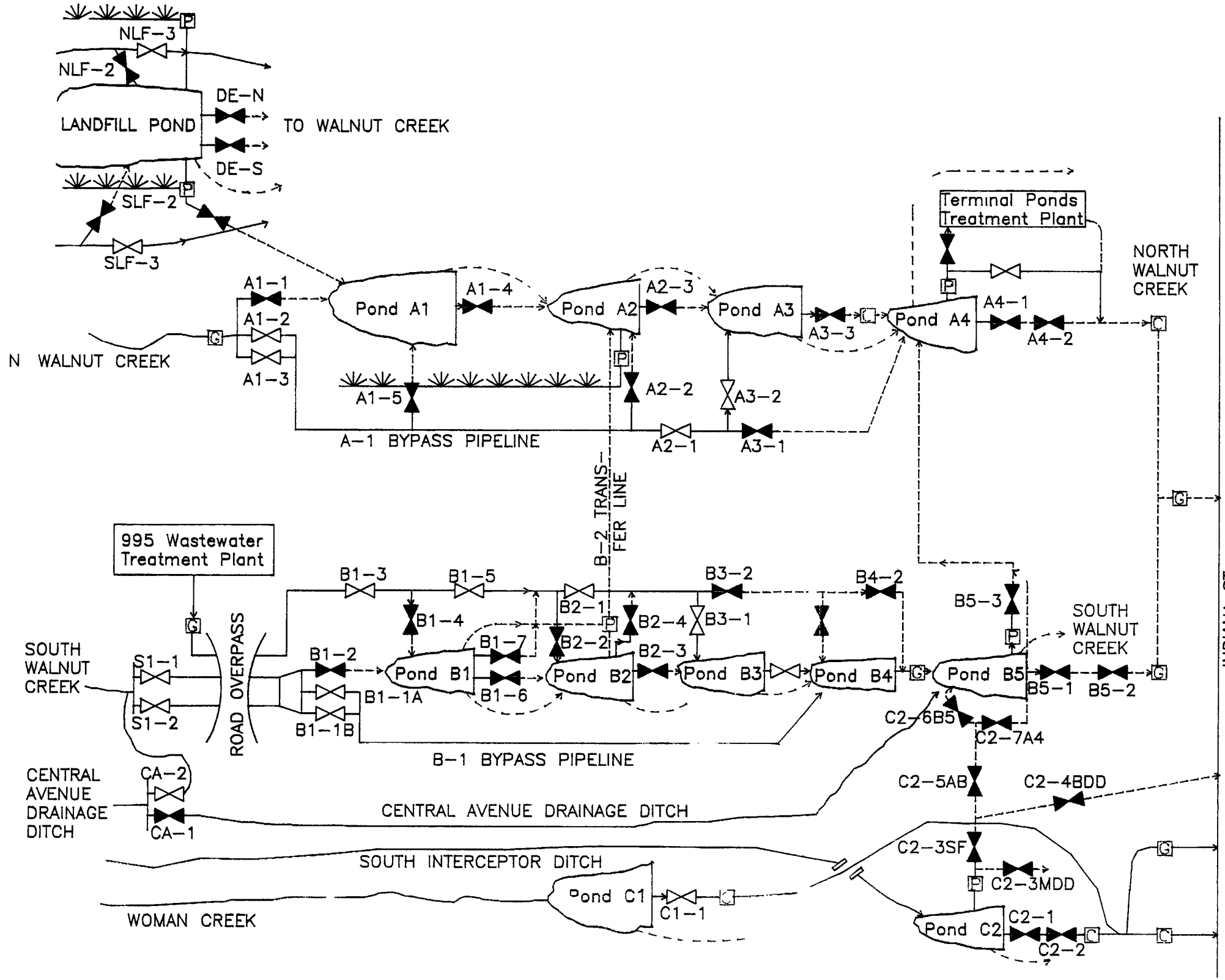
2	Crank Handles for Stabilizer Jacks



SITE AREA AND DRAINAGES

EG&G ROCKY FLATS, INC
U S DEPARTMENT OF ENERGY

09 18 92 | FIGURE 5 1



LEGEND

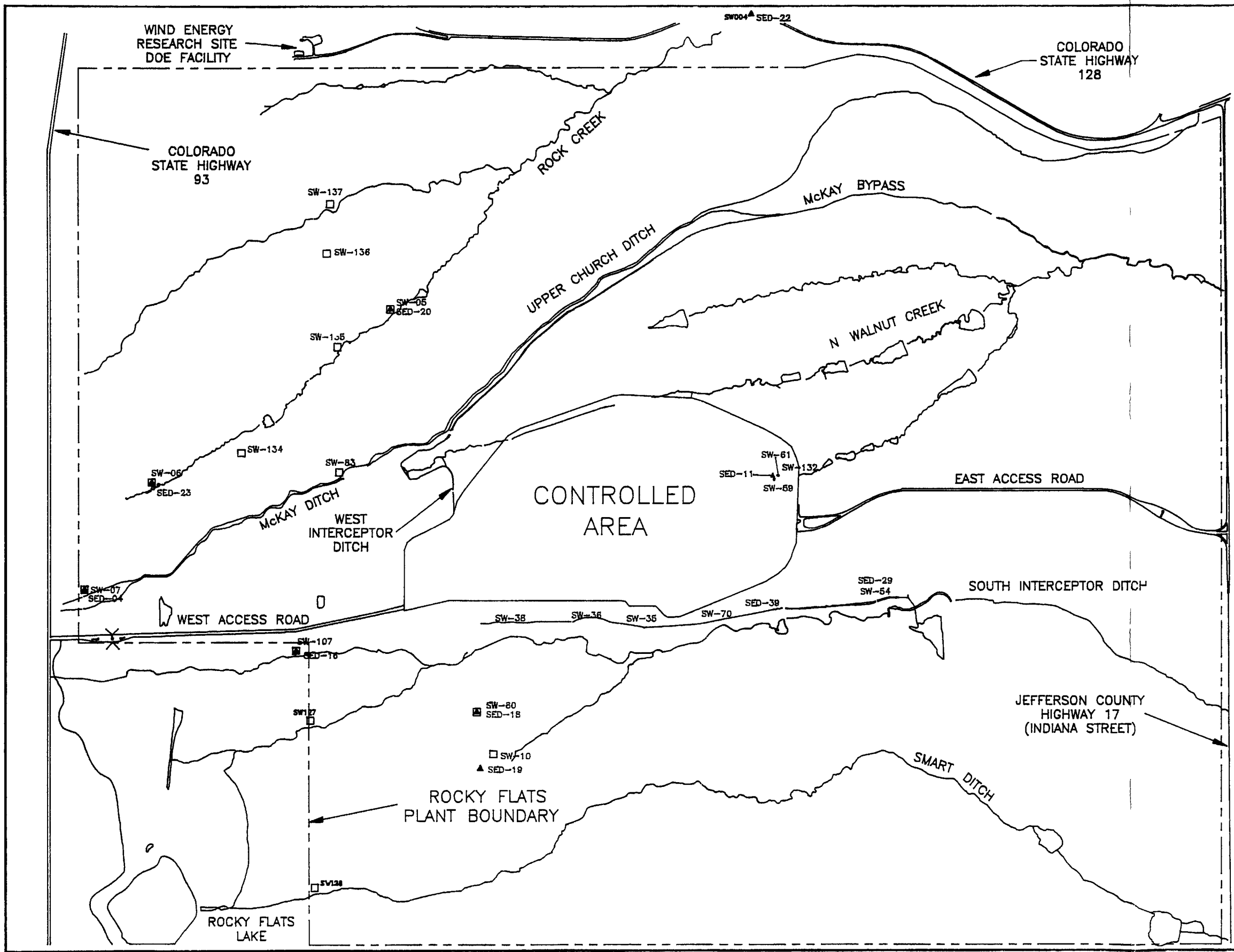
- Normal Flow Path (Unrestricted)
- Available Flow Path (Not Normal Use)
- Spray Evaporation System
- Detention Ponds
- Dam
- Emergency Spillway
- P Pump
- G Gauging Station
- Normally Closed
- Normally Open

NOT TO SCALE

SCHEMATIC FOR CURRENT FLOW AND WATER TRANSFER NETWORK AT THE ROCKY FLATS PLANT DETENTION PONDS

EG&G ROCKY FLATS INC
U S DEPARTMENT OF ENERGY

09/18/92 | FIGURE 3.3



LEGEND

- PAVED ROADS
- SURFACE WATER FEATURES
- SURFACE WATER STATION (NON BACKGROUND)
- SEDIMENT STATION (NON BACKGROUND)
- BACKGROUND SEDIMENT STATION
- BACKGROUND SURFACE WATER STATION

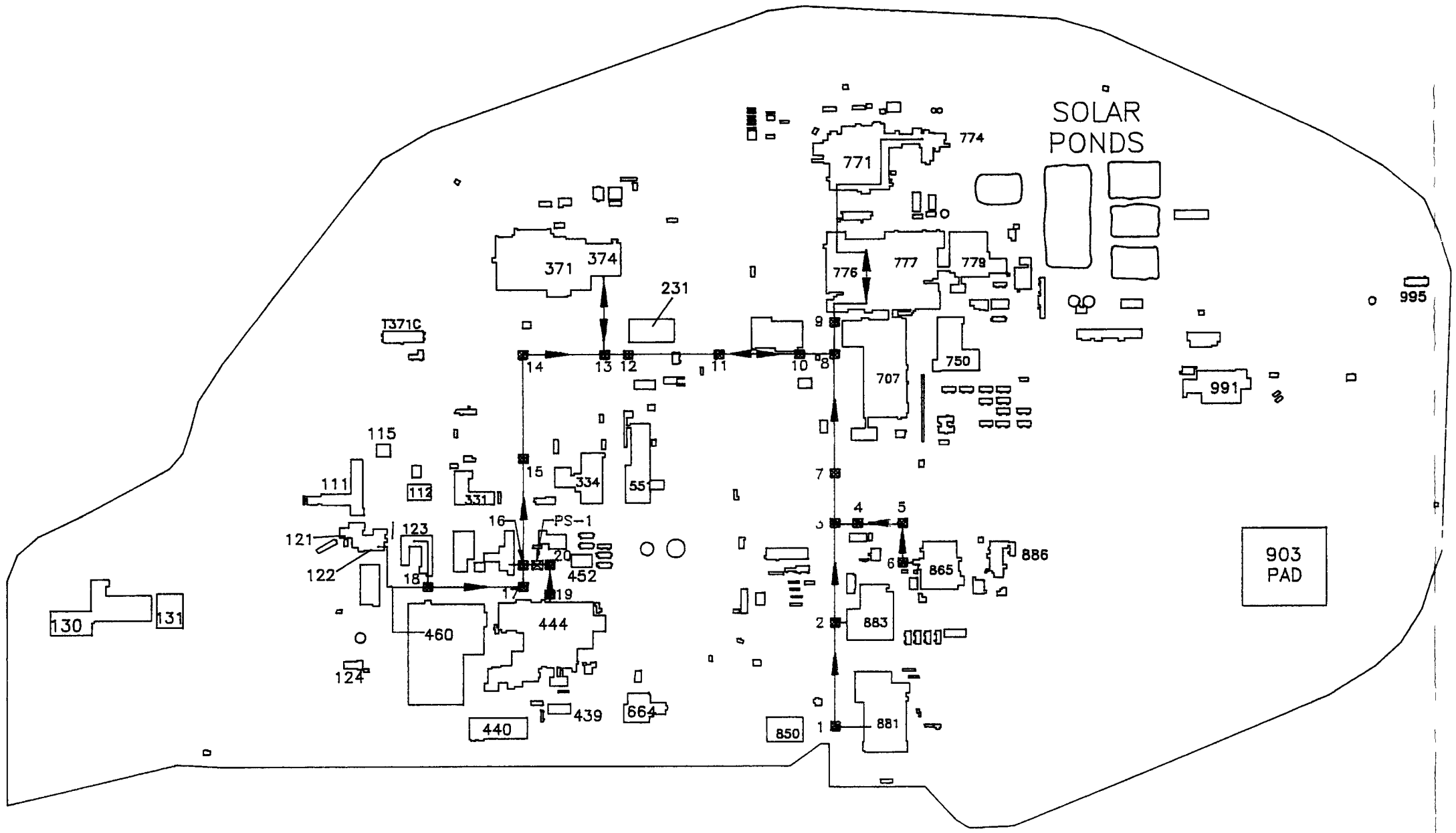
0 1500 3000

SCALE IN FEET

SURFACE WATER, STORM WATER, AND SEDIMENT SAMPLING LOCATIONS REMAINING IN THE PROGRAM FOR FISCAL 1993

EG&G ROCKY FLATS, INC
U S DEPARTMENT OF ENERGY

09/18/92 | FIGURE 6 1



LEGEND

DIRECTION OF FLOW

1 VALVE VAULT

PS-1 PUMPING STATION

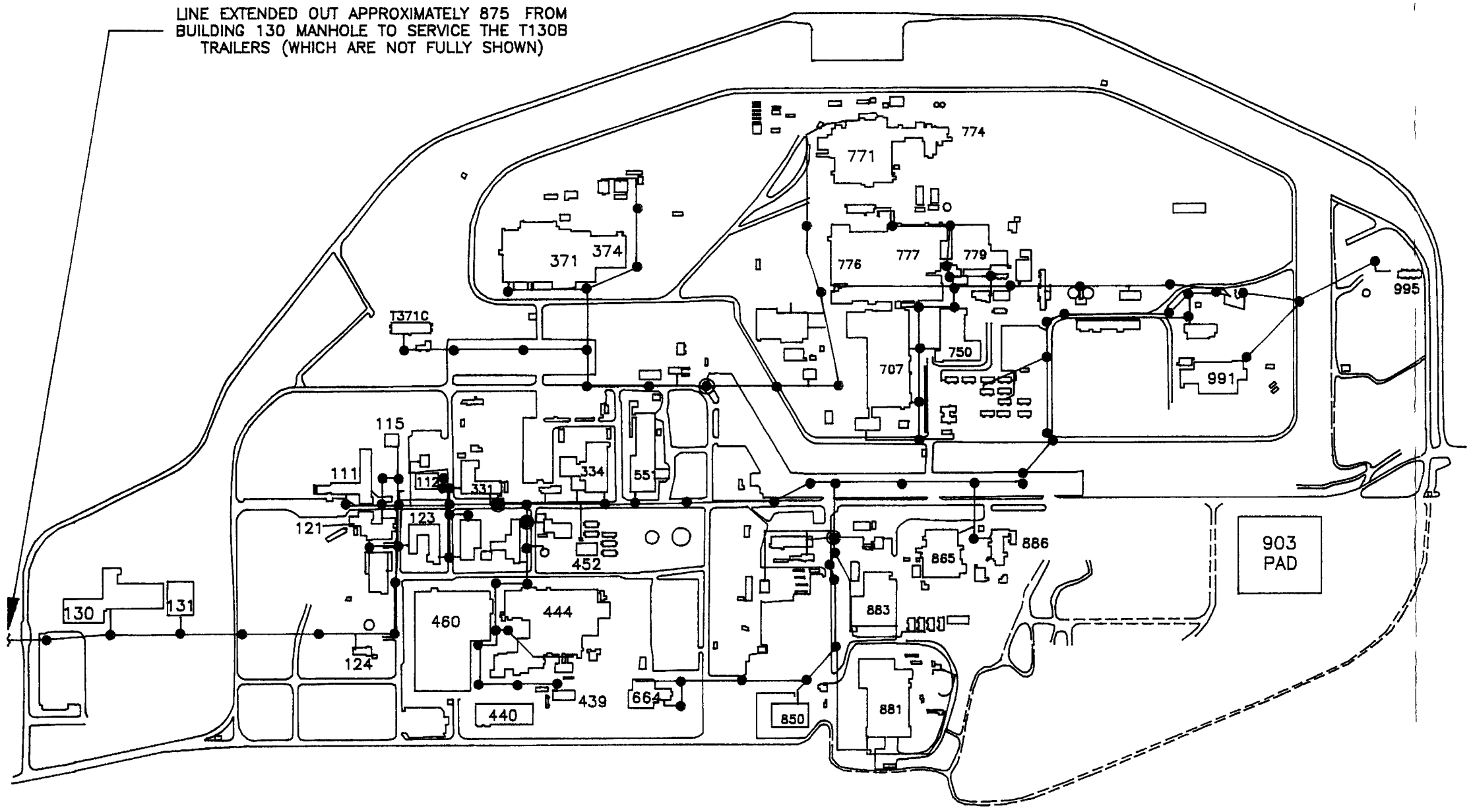
0 500 1000

APPROXIMATE SCALE
IN FEET

PROCESS WASTE SYSTEM

EG&G ROCKY FLATS, INC
U S DEPARTMENT OF ENERGY

09/18/92 | FIGURE 7 1



LEGEND

- MANHOLE
- MONITORING LOCATION
- SEWER LINE

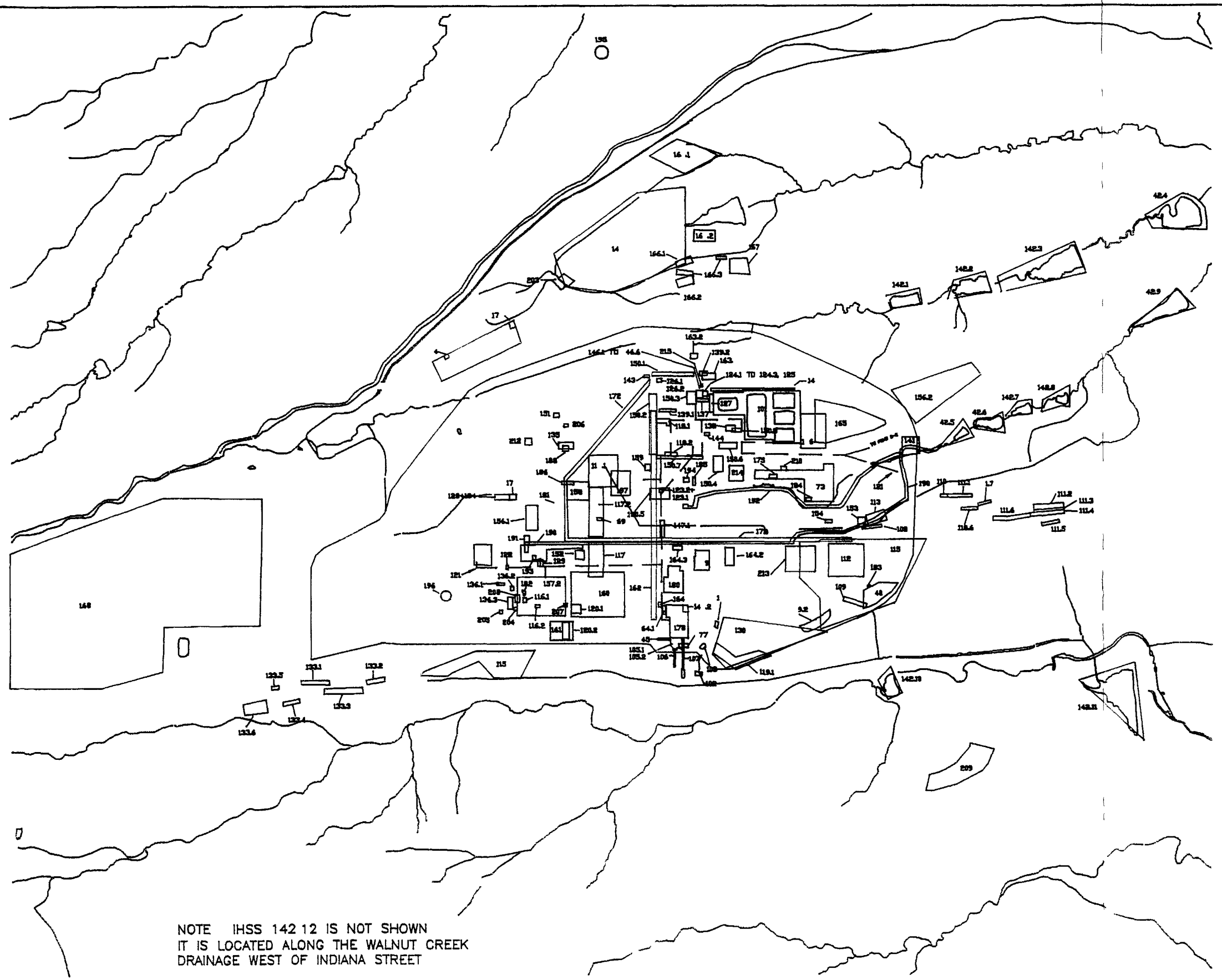
0 500 1000

APPROXIMATE SCALE IN FEET

SANITARY SEWER SYSTEM

EG&G ROCKY FLATS, INC
U S DEPARTMENT OF ENERGY

09/18/92 | FIGURE 7 3



LEGEND

IHSS

SURFACE WATER FEATURE

NOTE

THE LOCATIONS OF SOME IHSSs MAY CHANGE BASED ON INFORMATION CONTAINED IN THE HISTORICAL RELEASE REPORT

0 1000 2000

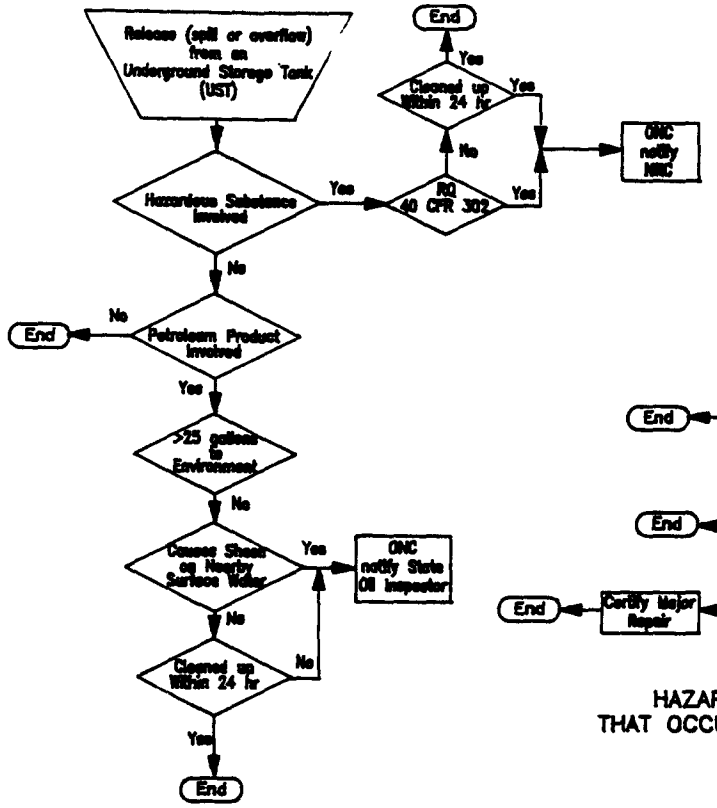
SCALE IN FEET

INDIVIDUAL HAZARDOUS SUBSTANCE SITES

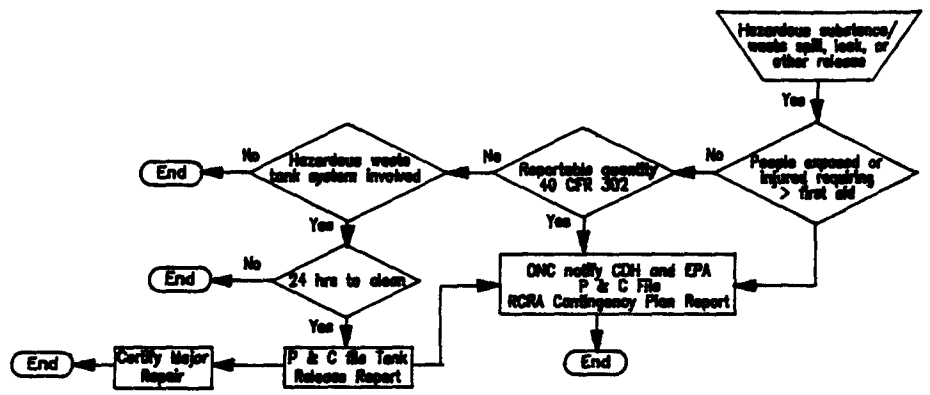
EG&G ROCKY FLATS, INC.
U S DEPARTMENT OF ENERGY

09/18/92 | FIGURE 7 4

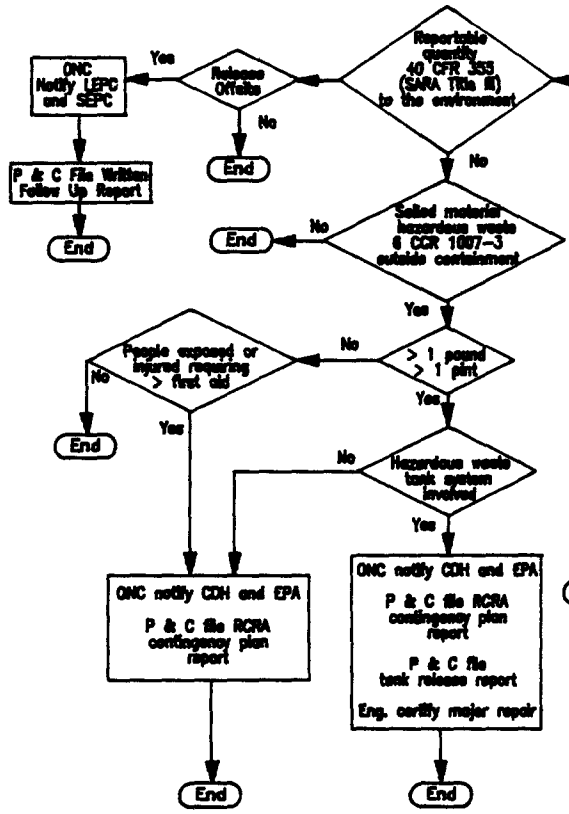
WASTE PROGRAMS DEPARTMENT RESPONSIBILITIES



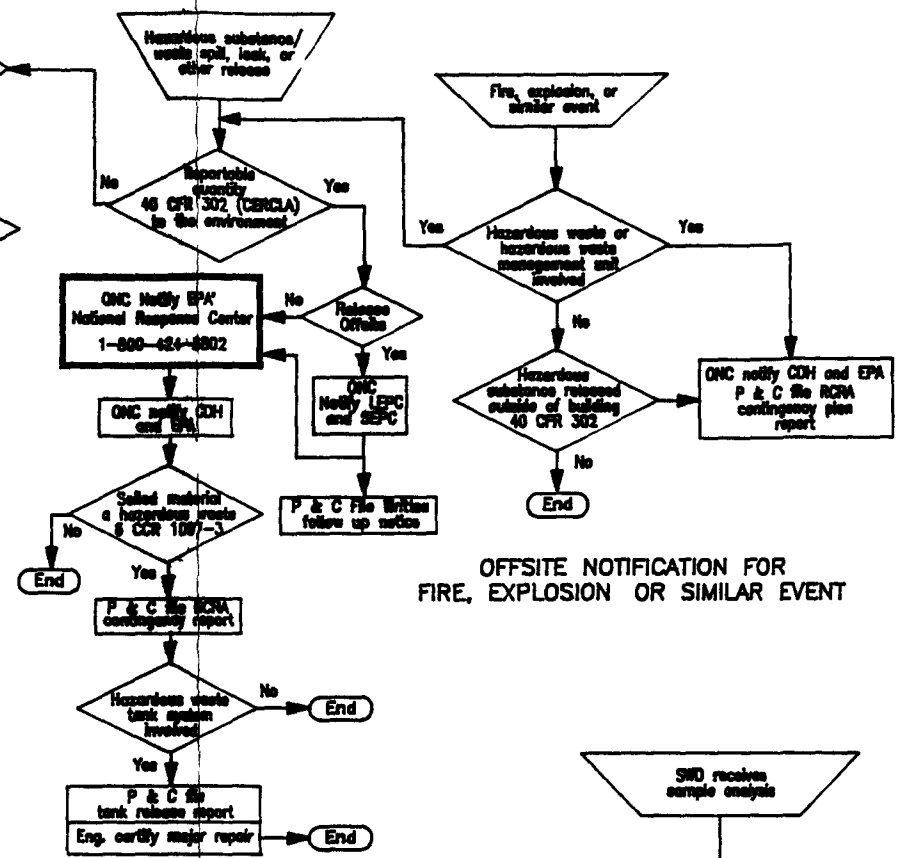
OFFSITE NOTIFICATION FOR UST RELEASES



OFFSITE NOTIFICATION FOR
HAZARDOUS SUBSTANCE/WASTE SPILLS
THAT OCCUR INSIDE BUILDING OR CONTAINMENT



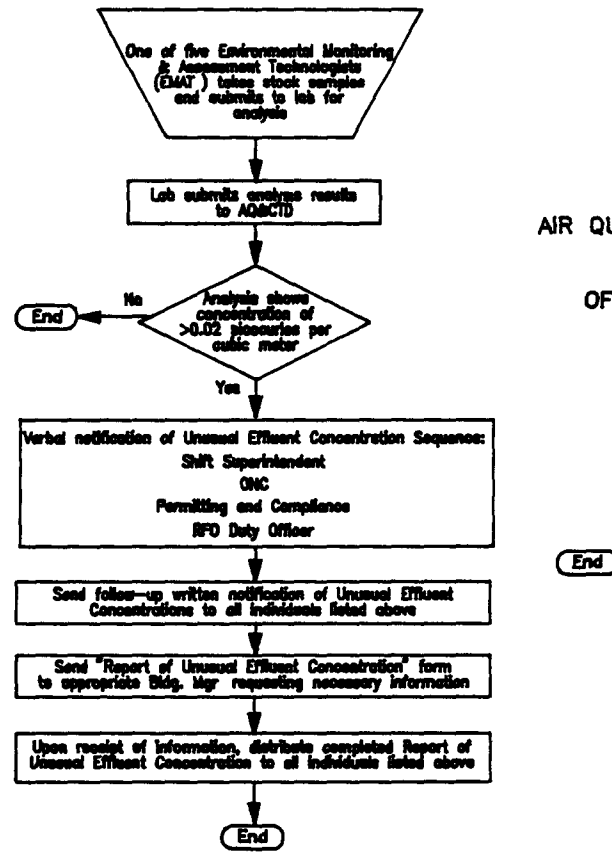
OFFSITE NOTIFICATION FOR
HAZARDOUS SUBSTANCE/WASTE SPILLS
THAT OCCUR OUTSIDE BUILDING OR CONTAINMENT



OFFSITE NOTIFICATION FOR
FIRE, EXPLOSION OR SIMILAR EVENT

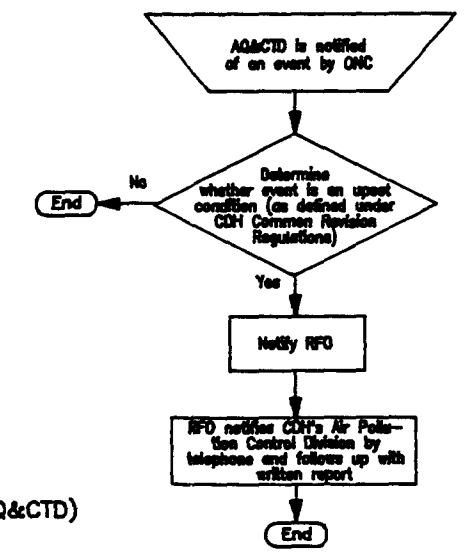
CDH — Colorado Department of Health
CERCLA — Comprehensive Environmental Response Compensation and Liability Act
EPA — Environmental Protection Agency
LEPC — Local Emergency Planning Committee
NRC — National Response Center
ONC — Occurrence Notification Center
P & C — Permitting and Compliance
RCRA — Resource Conservation and Recovery Act
RQ — Reportable Quantity
SERC — State Emergency Resource Commission
UST — Underground Storage Tank

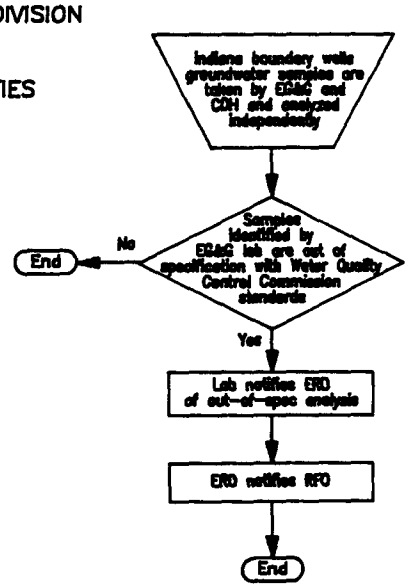
Source Modified from EG&G 1991 d



AIR QUALITY AND CHEMICAL TRACKING DIVISION (AQ&CTD)
AIR EMISSION RADIONUCLIDE
OFFSITE NOTIFICATION RESPONSIBILITIES

AIR QUALITY AND CHEMICAL TRACKING DIVISION
(AQ&CTD)
AIR EMISSION POLLUTANTS
OFFSITE NOTIFICATION RESPONSIBILITIES





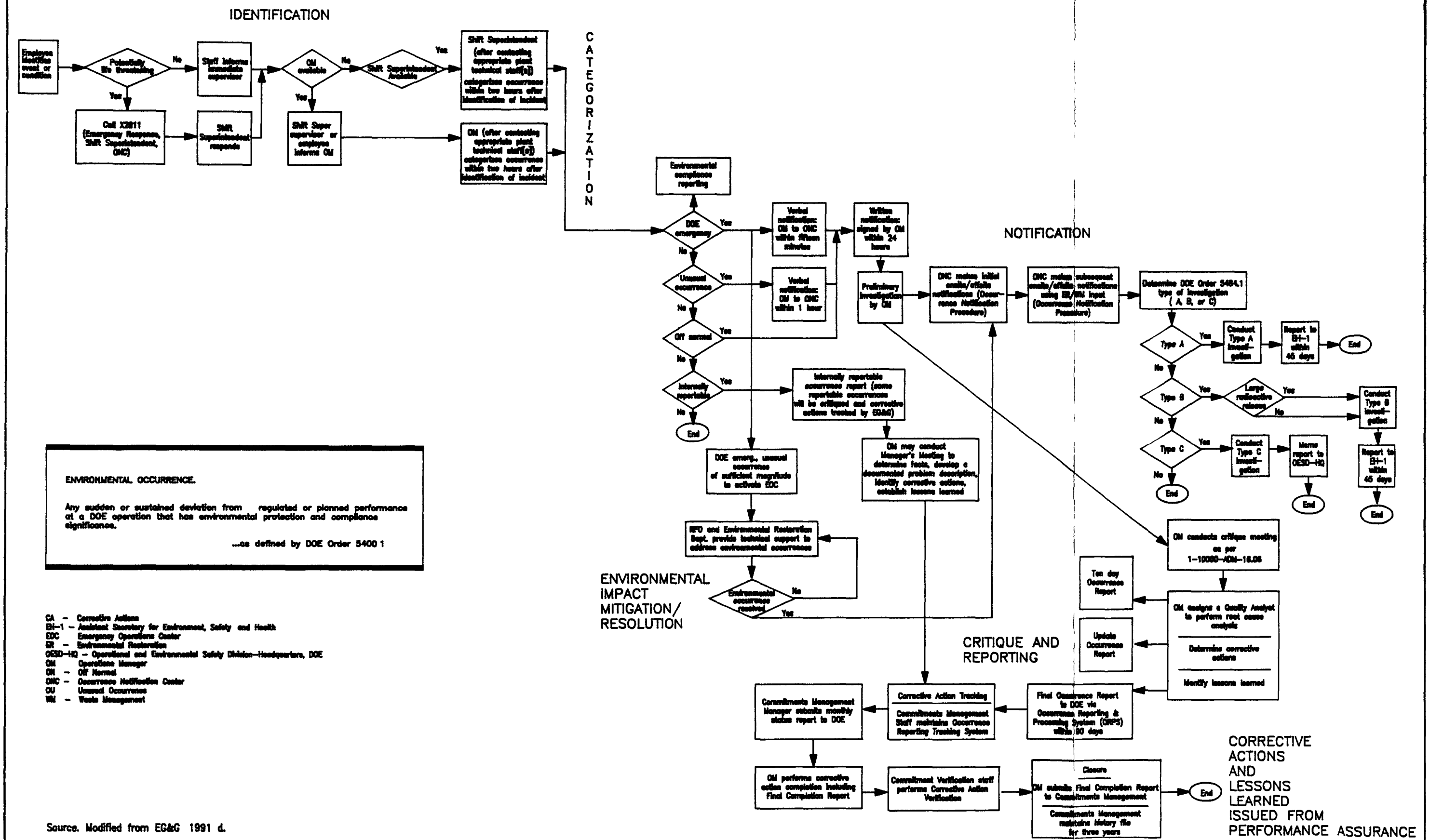
EARTH RESOURCES DIVISION (ERD)
GROUNDWATER MONITORING
NOTIFICATION RESPONSIBILITIES

SURFACE WATER DIVISION (SWD)
OFFSITE NOTIFICATION RESPONSIBILITIES

OFFSITE NOTIFICATION RESPONSIBILITIES

EG&G ROCKY FLATS, INC.
U.S DEPARTMENT OF ENERGY

09/18/92 | FIGURE 9 2



ENVIRONMENTAL OCCURRENCE.

Any sudden or sustained deviation from regulated or planned performance at a DOE operation that has environmental protection and compliance significance.

...as defined by DOE Order 5400 1

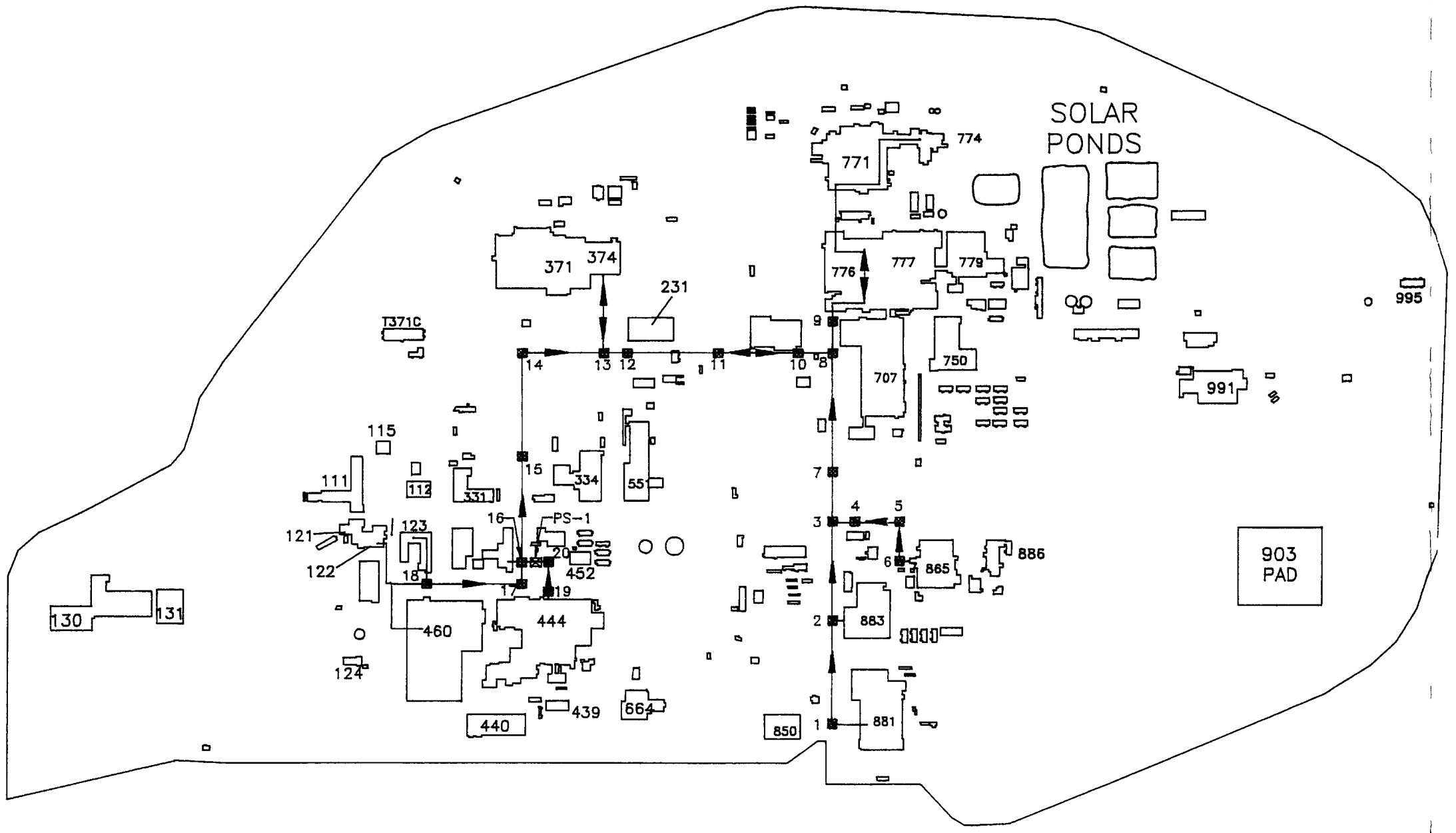
CA – Corrective Actions
EH-1 – Assistant Secretary for Environment, Safety and Health
EOC Emergency Operations Center
ER – Environmental Restoration
OESD-HQ – Operational and Environmental Safety Division–Headquarters, DOE
OM Operations Manager
ON – Off Normal
OMC – Occurrence Notification Center
OU Unusual Occurrence
WM – Waste Management

Source. Modified from EG&G 1991 d.

ENVIRONMENTAL OCCURRENCE MANAGEMENT

EG&G ROCKY FLATS, INC.
U.S. DEPARTMENT OF ENERGY

09/18/92 | FIGURE 9 1



LEGEND

DIRECTION OF FLOW

19 VALVE VAULT

PS-1 PUMPING STATION

0 500 1000

APPROXIMATE SCALE
IN FEET

PROCESS WASTE SYSTEM

EG&G ROCKY FLATS, INC
U S DEPARTMENT OF ENERGY

09/18/92 | FIGURE 7 1

TANK 242
STEEL STORAGE TANK 231B
PROCESS WASTE
950,000 GALLONS

TANK 155
EMERGENCY GENERATOR TANK
DIESEL FUEL
138 GALLONS

TANK 198
STEEL STORAGE TANK
UNTREATED PROCESS WASTE
121,600 GALLONS

TANK 240
STEEL TANK – SAND FILTER 1210
STP EFFLUENT
734 GALLONS

TANK 96
STEEL ELEVATED TANK
SULFURIC ACID
3000 GALLONS

DOCK AREA
LOADING DOCK AND WAREHOUSE AREA
OCCASIONALLY HANDLES REGULATED SUBSTANCES

TANK 315
STEEL TANK
WATER INFLUENT
15,995 GALLONS

TANK 272
PLASTIC TANK
DECONTAMINATION WATER
2000 GALLONS

TANK 268
PLASTIC TANK
DECONTAMINATION SEDIMENT/WATER
2500 GALLONS

LEGEND

- ● SURFACE WATER STATION (NOT BACKGROUND)
- △ SEDIMENT STATION (NOT BACKGROUND)
- ▲ BACKGROUND SEDIMENT STATION
- □ BACKGROUND SURFACE WATER STATION
- ⊛ SURFACE WATER MONITORING LOCATION
- ⊖ TANK LOCATION FOR MINIMUM AND MAXIMUM FLOW TIMES IN A DRAINAGE BASIN
- LOADING/UNLOADING DOCK AND WAREHOUSE AREA
- GENERAL DIRECTION OF SPILL FLOW

NOTE: Surface water and sediment stations may not be in the current monitoring program.

TANK INFORMATION OBTAINED FROM:
"Air Pollutant Emission Notice: Outside Industrial Storage Tanks," EG&G Rocky Flats, Inc., Golden CO, April 24, 1992.

DRAINAGE BASINS:

0 500 1000
SCALE IN FEET

SPCC-BMP DRAINAGE BASINS AND GENERALIZED DIRECTIONS OF SPILL FLOW

EG&G ROCKY FLATS, INC.
U.S. DEPARTMENT OF ENERGY

09/18/92 | PLATE 1